A

# TREATISE

ON

# EXPERIENCE

IN

# PHYSIC.

by Johann Georg, ritter von Zimmermann.

VOL. II.

LONDON.
Printed for G. WILKIE, No. 71, St. Paul's Church-Yard.
MDCCLXXXII.

BOSTON MEDICAL
APR 15 1904
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**The Editor, having been unable to attend to the Correction of the Preſs, begs the Reader to excuſe the following and other ERRATA (eſpecially in punctuation) which he may meet with in the Courſe of the Work.**

## Vol. I.

Page 211 for ' Dourlack' read ' Dourlach'.
218 for ' ſquamore' read ' ſquamoſe'.
228 for ' compreſſed, by ſome very great' read ' compreſſed by ſome very great'
244 for ' Plethera' read ' Plethora'

## Vol. II.

Page 16 for ' faw' read ' ſaw'
19 for ' by the perſuaſion' read ' the perſuaſion'
29 in the note for ' Zacutus, Luſitanus' read ' Zacutus Luſitanus,
31 for ' do to the ſight, read ' do the ſight'
32 for ' diveſting' read ' diverting'
33 in the note for ' in the virtue' read ' on the virtue'
53 in the note, for ' celadine' read 'celandine'
for ' raſpberies' read ' raſberries'
36 for ' ſimilar totheſe of the caſe' read ' ſimilar to thoſe of the caſe,
61 for ' enthuſiaſt' read ' catholics'
in the note for ' operation' read ' operations'
63 in the note, for ' Demenologie' read ' Demonologia'
for ' Wierns, read ' Wierus'
65 for ' Reumeu' read ' Reaumur'
79 in the note for ' are' read, ' is'
83 for ' adapted' read, ' adopted'
88 for ' ſigns' read ' ſign'
102 for ' hia' read, ' his'
125 in the note, omit the ? after wanted
131 for ' bound' read ' abound'
157 for efferveſce' read ' efferveſce'
eflerveſcence' read ' efferveſcence'
167 in the note, for ' Lolilüs' read ' Lolüs'
189 for ' Nothen' read ' Northern'
193 for ' aſeends' read ' aſcend'
205 in the note, for ' ca. efit' read ' calefit'
208 for ' endemical' read ' endemial,

*†* Some few notes in the courſe of this work are diſtinguiſhed by an S; but this was by miſtake, all the notes being the work of the ſame hand.

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# BOOK V.

## *Of* GENIUS; *and its progreſs towards* EXPERIENCE.

### CHAP. I.

### *Of Genius, in general.*

IT is not ſufficient to conſider objects and individual facts with exactitude; we muſt likewiſe be able, to deduce from them, general notions, conformable to the nature of things. For this we muſt be indebted to Genius.

Amongſt the qualities of the mind, Genius ſeems by one common aſſent to hold the firſt place. We find in it ſomething that is original; ſomething that is ſuperior to what is thought, and done, by the generality of men. It raiſes a man above the level of the vulgar. I underſtand by Genius, a high degree of refinement, ſenſibility, and penetration;

or, in other words, an extreme degree of perfection in all the faculties of the mind.

We ſee poets who ſeek for the baſis of Genius in the ſtrength of their imagination. A poet, of this ſtamp, has a right to think as he pleaſes of himſelf. He may be permitted to fancy, that more grandeur is attached to the writing a verſe, than to the guiding an empire; or, that there is more glory in ſinging an hero, than in being one. It is from ſuch falſe principles, that ſo many abſurd things have been ſaid on the ſubject of Genius. Even a certain degree of reaſon has ſometimes been refuſed it; becauſe men have miſtaken the wild ſallies and tranſports of an irregular imagination, for Genius.

If the fire of imagination conſtituted true Genius, the management of an army, or the ſtate, ſhould be intruſted only to thoſe who have more wit than prudence; more fire than reaſon; more inconſtancy than uniformity; who always ſee more than it is poſſible to ſee in Nature, and, who ſeek for what is truly great, only by whims and fancies.

Genius, conſidered in its moſt favorable light, ſeems to conſiſt in all the collected powers of the mind. A man of Genius has a vigorous and a lively mind; but as theſe powers have a tendency only to what is truly great, ſo they ſeem to act only as he wills. A ſtrength of imagination, conſidered in its higheſt degree, is incompatible with true judgment, and admits of no laws. It will therefore be readily conceived, that judgment, viewed in this light, comes in for as great a ſhare in the formation of Genius, as the ſtrength of imagination does. If, for example, we are to conſider a chain of ideas, one after the other; to figure to ourſelves theſe notions; with the greateſt order and preciſion poſſible; to examine things, either ſynthetically or analytically; and then throwing the eye over the whole, to give it a new form, a new life, as it were, and make it all our own: we may, indeed, do all this, by means of the imagination, but we ſhall do it unſafely; by means of judgment, we ſhall accompliſh it ſlowly and ſurely; but poſſeſſing Genius, we ſhall avoid the defects of both, by doing it quickly and with certainty. This proves, that imagination, taken in its utmoſt legitimate extent; and the greateſt depth of judgment, are required to give true Genius.

I have derived this idea of Genius from the works of the moſt celebrated artiſts of Greece. The noble ſimplicity, the impoſing grandeur, to be perceived in thoſe reliques, both in their poſition and expreſſion, were the reſult of a powerful imagination, which knew no other limits than thoſe of the moſt refined judgment. The Abbé Winkelmann, who poſſeſſed the rare talent of penetrating to the interior of every object, and to perceive in it a number of things which eſcape ſo many others, has remarked, that in many of theſe reliques, the expreſſions of the paſſions, and of the active ſtrength of the muſcles, do not partake of the leaſt conſtraint, or are, in the leaſt, repugnant to truth and nature.

A man of a lively and active Genius, throws his eye on every thing around him, and, with a happy facility, combines the whole under one point of view; becauſe, he at once embraces the whole, and perceiving the chain and connection of all its parts, deduces from it inconteſtable truths. Thus, the man of true Genius, perceives and comprehends, in a given time, an infinite number of things, which others, who have leſs Genius, can either not ſee at all, or require more time, to ſee. He connects his ideas in the moſt ready and juſt manner, and diſcovers, by ſuch a combination, a number of important and enlightened truths, which were before concealed.

He, who, though deſtitute of Genius, has a conſiderable ſhare of underſtanding, may, indeed, make ſuch a combination; but he will do it ſlowly: whereas, the man of Genius, will proceed more rapidly. He ſhould be aware, however, that the more readily and ſpeedily he does this, the more precaution ought to be uſed. Lord Bacon did well to ſay, "that Genius did not require wings, but "lead."

It will be underſtood from what I have ſaid, why there is more difference between enlightened minds and men of no Genius, than there is betwixt certain men and particular races of animals. A little mind, buſied about individual objects, and of theſe, only a ſmall number, will have but very few ideas, notwithſtanding his preſumption. Being incloſed within a very narrow circle, he ſeems to poſſeſs many advantages over the man of ſuperior and more enlightened Genius. Employed about trifling objects which every one perceives, he is always, as it were, in the centre of his little ideas, and will therefore be leſs likely to err, in routes which he is every moment traverſing; whereas the other, being employed about more numerous and extenſive objects, is liable to be deceived if he acts with too much precipitation. This ſeems to be the reaſon, why men generally depend the moſt on what is delivered by perſons of confined Genius; whilſt they conſider, as chimerical, every thing that comes from men of ſuperior talents. It is on the ſame account likewiſe, that a man, of moderate talents, is conſidered as a man of Genius by the greater number of men; whilſt the ſame people look upon a man, of a truly great Genius, as a ſimple fellow (*a*).

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(*a*) In a very elegant little book, lately publiſhed by Miſs Hannah More, there are ſome expreſſions, which are ſo ingenious, and ſo extremely applicable to this part of the work, that I beg leave to quote them. " With ſuperficial judges, " who, it muſt be confeſſed, make up the greater part of the " maſs of mankind, talents are only liked, or underſtood, " to a certain degree. Lofty ideas are above the reach " of ordinary apprehenſions: the vulgar allow thoſe who " poſſeſs them to be in a ſome what higher ſtate of mind than " themſelves; but of the vaſt gulph which ſeparates them, " they have not the leaſt conception. They acknowledge a " ſuperiority; but, of its extent, they neither know the value, " nor can conceive the reality. It is true, the mind, as well as " the eye, can take in objects larger than itſelf; but this is " only true of great minds: for a man of low capacity, who " conſiders a conſummate Genius, reſembles one, who ſeeing " a column for the firſt time, and ſtanding at too great a " diſtance to take in the whole of it, concludes it to be flat. " Or, like one unacquainted with the firſt principles of philo" ſophy, who finding the ſenſible horizon appear a plain ſur" face, can form no idea of the ſpherical form of the whole, " which he does not ſee, and laughs at the account of anti" podes, which he cannot comprehend". *Eſſays on various Subjects, principally deſigned for Young Ladies.* 8vo.

I place Judgment and Wit between Stupidity and Genius. A man who poſſeſſes a juſt judgment, ſees the dependence of an idea when it is ſhewn to him: a man of Genius, finds it of his own accord. A man of wit, ſhews that he obſerves ſome reſemblance in objects that appear diſtant from each other, and which judgment would not have diſtinguiſhed without this wit. So that wit ſuppoſes a much greater number of ideas and obſervations, and indeed, a much greater readineſs to connect and expreſs theſe ideas with preciſion and vivacity, and thus to paint, as it were, objects; whereas, judgment does this, only by means of deep reaſoning, in which it very often loſes itſelf.

A man of the beſt and moſt ſolid Genius in Switzerland, tells us, in his moral and political Eſſays, that Wit and Genius are only two different degrees, of the ſame readineſs to connect the ideas and the images of objects in a new and intereſting manner.

It has been ſaid, that truth is produced only by the colliſion of different opinions: it may be ſaid likewiſe of Genius, that it never ſhines forth but when ſome object preſents itſelf capable of ſtopping it. All the arts and ſciences do not require a particular kind of Genius, although we embrace every object with more or leſs readineſs. He who diſcovers many truths, not very intereſting in themſelves; or, a ſmaller number of truths, that are capable of very extenſive combinations, muſt, of courſe, have ſome Genius; but this is not enough to conſtitute the man of Genius: nor is a man of Genius to be confounded with a Great Genius, or, in other words, with a Genius.

There are, however, different ſorts of Genius, and, of courſe, different ſorts of men of Genius; and likewiſe, men of great genius, of different kinds and merit. Poets, of the firſt order, are to be conſidered as men of great genius; and, indeed, the word *Poet*, ſignifies *Creator* (*b*). Newton, Leibnitz, Colbert, and Turenne, were men of great genius; and ſo were Homer, Virgil, Voltaire, and Racine: and yet, Turenne would never have determined the laws of the univerſe, nor would Newton have gained a battle. Colbert would not have written the Iliad; nor Leibnitz the Henriade, or the tragedies of Corneille and Racine. There are as many diſtinctions in Genius, as there are between the voice and the Genius of each individual.

Theſe reflections lead us to perceive three kinds of Genius, very different the one from the other. 1. That which requires more imagination than judgment; this belongs to poets and painters. 2. That which requires more judgment than imagination; this we obſerve in natural philoſophers and mathematicians. 3. That which requires as much judgment as imagination; this is eſſential to con-

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(*b*) The poet's eye in a fine frenzy rolling,
Doth glance from heaven to earth, from earth to heaven;
And, as imagination bodies forth
The form of things unknown, the poet's pen
Turns them to ſhape, and gives to airy nothing
A local habitation and a name.

SHAKESPEARE.

duct the affairs of government, or an army, and to form the phyſician. It is well known, that one or other of theſe ſorts of Genius may be combined in the ſame perſon. There are ſome men of great Genius, ſuch as Baron Haller, who ſeem formed for every thing; who, like Lord Bacon, point out diſcoveries before hand, or accompliſh them like Newton.

I have already obſerved, in the firſt chapter of this work, that the mind forms its concluſions from ſimple and certain principles; or, from complex, uncertain, and indeterminate principles. The firſt, are thoſe of natural philoſophy and the mathematics. The ſecond, thoſe of the art of government, the art of war, and the healing art. In the firſt, the ideas ſeem to ariſe, as it were, naturally and of their own accord; in the latter, they are factitious. One of theſe arts or ſciences will thereſore be attained much ſooner than the reſt.

The merit of labour and ſtudy, is not to be compared with happy natural talents. Every thing that requires only memory and application, is not to be conſidered as a part of Genius, becauſe it may be attained by aſſiduity. A man, by long and attentive application, may ſoon acquire the firſt principles of the mathematics, and even a mediocrity in that ſcience. On the contrary, patience and ſtudy will do but very little, and the Genius almoſt every thing, in an art, which, in the generality of caſes, is founded wholly on probabilities; and, in which, the ſucceſs of an operation will depend on a readineſs and faculty of perceiving the higheſt degree of theſe probabilities.

Art may be ſaid to be founded, in general, on probabilities, when it affords no inconteſtable rules, and when no fixed plan can be adopted in every caſe; when the mind is required to act without being ſufficiently inſtructed, as if it was; when it is alone unable to regulate itſelf in very variable circumſtances; and when it may be ſaid to approach to, rather than, to embrace truth. Politics, the Art of War, and Phyſic, are of this kind.

That deliberate coolneſs, without which a man never conducts himſelf well, according to circumſtances, and without which we are expoſed to contradiction and imprudence; that ſtrength of mind, which checks the imagination by ſound judgment; which, on every occaſion, and in every circumſtance of life, preſerves the mind from wandering, and likewiſe guards againſt precipitation and error; which has been denied to Genius, merely becauſe men have attached the idea of Genius only to poetry; this faculty, I ſay, is eſpecially remarkable in the character of a true politician. Without this ſort of Genius, ſays Mr. Moſes, not all Pitt's ſagacity, patience and cunning, would have preſerved him, unmoved, in the ſtorm which threatened his country.

A readineſs to embrace at one glance of the eye all the caſes that can poſſibly preſent themſelves; to diſcern, with a tranquil mind, that which is beſt, according to its higheſt degree of probability; and, to act with readineſs in conſequence thereof, is, in the general of an army, the ſole work of Genius. Too much ſlowneſs in examining things, and too much precaution in the choice of them, are always unſucceſsful. Opportunity muſt be ſeized the moment it preſents itſelf, otherwiſe, we may ſuffer it to eſcape. This gave the Duke of Guiſe occaſion to ſay: "*I am determined never to* "*do any thing, about which I heſitate a ſingle mo*"*ment.*" Age, therefore, is not requiſite to be dexterous, in any art or ſcience, which demands more Genius than time. He, who at thirty years of age, is not an able miniſter, an able general, or an able phyſician, will never be ſo.

Youth, if ſeaſoned with reflection; or, a middle age, are either of them, indiſputably, very advantageous to Genius. The mind, at this time of life, is not yet enſlaved by prejudice. It is only at ſuch an age, that a man can determine himſelf to quit the common road, and to embrace truth, whether time has given it his ſanction or not; and that he learns to know, and to reliſh it, without difficulty, either from his own countrymen, or from ſtrangers. Jealouſy is ſeldom deeply rooted in us, till we advance farther in life; we abound with hope and expectation; a noble ambition ſeems to ſpur us on to ſeek out, and examine every thing that may flatter the underſtanding; we even ſeem actuated by the ſole deſire of being uſeful. The ſoul is then in the meridian of her ſtrength, conſtantly and uniformly employed, ſhe knows how to avoid the falſe ſalſe lights which might conduct her into error; becauſe, it is no irregular ſally of the imagination that leads her on, but an activity, a coolneſs of mind, which ſecure ſucceſs. A man of Genius, at the age we are ſpeaking of, caſts a penetrating regard to the very bottom, as it were, of the ſciences. We can compare him only to the eagle, who looks up to the ſun with an undaunted eye; both his boldneſs and his hopes are boundleſs.

Young, has obſerved, that truly great men, come compleatly formed from the hands of Nature, as Pallas did from the brain of Jupiter. Thus, Laurence de Medicis, John de Wit, Segnalis, Temple, Richlieu, Alberoni, &c. were politicians from their birth. Xenophon, Phocion, Alexander, Pyrrhus, Hannibal, Scipio, Pompey, Cæſar, Germanicus, Julian, Spinola, Guſtavus Adolphus, Condé, Turenne, Mauritius de Saxe, Eugene, &c. were heroes from their cradle. The Genius of all theſe men, even in their earlieſt days, ſeemed to ſtand them in the ſtead of experience. It is certain, that with this rare gift of Nature, a perſon will make a much more rapid progreſs, even in his early youth, than he will be able, without it, to do in a long ſeries of years. There can be no doubt, but that the illuſtrious perſonages I have mentioned, were dexterous commanders, even before they knew how to handle the ſword. Young ſoldiers have often been ſeen to excel the oldeſt officers, by mere dint of Genius.

Both Reaſon and Obſervation, therefore, prove to us, that Genius, aſſiſted by Experience, will do every thing that is poſſible to be done; and that a man, who has more experience than another, has not always ſeen more; but has thought, and reflected on, and examined better, and more minutely, that which he has ſeen. So that a young man may, on this principle, have infinitely more experience, than one with grey hairs; and be a better phyſician, than he, who reckons his experience, only by the number of years he has lived.

I have placed the art of war, the art of government, and the art of phyſic, in the ſame claſs; becauſe they depend on the ſame faculties of the mind, and on the ſame kind of Genius. A great phyſician may, in the ſtricteſt ſenſe of the term, be ſaid, to poſſeſs as elevated a Genius, as a great general: and this is the reaſon, why it is as rare to find a Sydenham, as a Turenne (c).

In diſtinguiſhing and arranging the phenomena of diſeaſes, the mind of the phyſician aims at diſcerning their intrinſic and eſſential qualities, to aſcend from the effects to the cauſes, to diſcover from theſe the indications of cure, and the application of ſuitable remedies; and thus, to aſcertain, by their uſe, thoſe circumſtances of the effects which are obſcure, when the poſſible cauſes are known. But theſe intrinſic qualities, are often very difficult of inveſtigation, or very uncertain.

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(c) The learned Sir William Blackſtone recommends the ſtudy of the Law to phyſicians, "to compleat the character of "general and extenſive knowledge; a character, which their "profeſſion, beyond others, has remarkably deſerved."
*Commentaries on the Laws of England, Vol. I.*

Every diſeaſe does not fall under the ſenſes. The complaints of the ſick are, in many caſes, not ſufficient to point out the nature of their diſorder. The queſtions of the phyſicians prodnce, perhaps, no light on the ſubject. In ſuch a caſe, he can reaſon only from analogy and probability. How much penetration, therefore, is required in theſe obſcure caſes, to come as near the truth as is poſſible. It may be ſaid, that phyſic is the art of conſidering, with rapidity, a great number of events preſented to us, by chance, aſcertaining the connection they have with each other, and thus, by deducing from them luminous data, paſſing from that which is known, to that which is unknown. The firſt of theſe heads, includes the complaints of the patient; and the latter, the charges that have taken place within him.

The art of combining this infinity of poſſible events, conſtitutes the Genius of the phyſician. The more this Genius is elevated, the better will it diſcover the affinity of the ſeveral ſymptoms; and thus be enabled to compare, and combine, and examine them with more or leſs preciſion. This faculty becomes a talent which paſſes, as it were, in inſtinct, and which ſeems to be the leſs perceived in proportion, as it is more extended.

All this ſerves to convince us how eſſential is Genius to the ſucceſsful practice of phyſic, and how abſurd it is to imagine, that a collection of formulæ is ſufficient to form a phyſician. They, who ſuppoſe this, have not capacity enough to diſcern the difficulties, which every day occur in the practice of this art, and which are infinitely ſuperior to the powers of a moderate underſtanding. A man of true Genius is ſometimes unable to unfold them. There is, indeed, an infinite ſhare of penetration and acuteneſs required to diſcern and diſcriminate ſo many complex effects of cauſes, which are very often almoſt impenetrable. Baron Haller tells us, that Boerhaave, who, even to his 70th year, had, in general, devoted ſixteen hours every day to the ſtudy of his profeſſion, often complained of theſe extreme difficulties, and of people who were daring enough to practice, without having ever ſtudied, or reflected in their lives.

Friend obſerves, that it is in phyſic we are to ſee what can be done by a penetrating Genius, and be convinced of the importance of ingenuity and diſcernment. Can it be poſſible, therefore, for little minds to ſucceed in an art, in which the greateſt penetration, and the ſoundeſt judgment, are ſo often embarraſſed by inſurmountable difficulties? Can ignorant men, who are uninformed and deſtitute of Genius, be ſuppoſed to poſſeſs the qualities eſſential to a phyſician? Can they, who ſeem never to have been capable of one ſolid reflection, ever be able to eſtimate ſo great a diverſity of circumſtances, which ſeem obſcure even to the moſt elevated and improved Genius? and yet, we every day, ſee ignorant people, who profeſs to practice, and to underſtand this important art, without having ever been at the pains to ſtudy its firſt principles. Theſe people, do, indeed, increaſe in years, but never add to their knowledge. They grow old, like ſapleſs trunks, without affording any good to humanity, and ſeem indeed to live, only to impoſe on the credulity of their fellow-creatures. Their whole life appears to be a ſcene of uniform ſtupidity.

Every branch of phyſic, does not ſeem to require the ſame Genius. Anatomy, botany, and the knowledge of medicines, ſeem to require more time than Genius. Phyſiology, pathology, and ſemeiology, require more Genius than time. The practice of phyſic requires very little time, but a great ſhare of Genius. With reſpect to the ſciences which have an affinity to each other, ſuch as Phyſic and Surgery, for example, it may be ſaid, that the latter is to the former, what the Mathematics are to Natural Philoſophy. There is hardly any art or ſcience, which riſes ſuperior to moſt ordinary talents, when we learn it only by fixing the ſenſes on objects to perceive them, and when we confine ourſelves to the moſt ſimple and ſenſible principles.

A phyſician is required in a ſuitable moment, to find out the ſuitable remedy; and hence, Galen has ſtiled the phyſician, *an inventor of opportunity*. A man of Genius will be able to perceive this opportunity, with a very little ſhare of learning, and even without Experience. I formerly knew an eccleſiaſtic, who joined to a truly philoſophical Genius, a very extenſive knowledge of the languages, and fine arts, together with great taſte, and an intimate acquaintance with theology and natural hiſtory. He had, perhaps, never read three medical books. I was aſtoniſhed to hear him ſpeak of ſome caſes he had ſeen, with a degree of practical knowledge, infinitely ſuperior to that of many practitioners, who are conceited with their pretended Experience. Neither reading, nor application, nor opportunities of ſeeing, will give this Genius. It depends wholly on an happy organization. Every thing that a phyſician does without this talent, will riſe only to mediocrity. He may attain to great reputation, amongſt men of little minds; but he will gain no credit with thoſe of true Genius. The fame he acquires, will die with him. However much a man may apply himſelf to his profeſſion, he will never extend his Genius beyond the ſphere to which nature has fixed it. Dubos writing on this ſubject, obſerves, "That "application may improve, but cannot extend, Ge-"nius. Art will enable it only to conceal its li-"mits, and not to paſs beyond them".

To paſs from the known to the unknown, a man muſt neceſſarily think more than he ſees; he muſt be able to figure to himſelf, that which is inviſible, as if he really ſaw it; he muſt conclude, from that which is, on that which may be; and hence he will often be obliged to gueſs, and to make frequent attempts, before he can gueſs. It is peculiar to Genius, to proceed ſlowly in doubtful matters, but to run with rapidity through a known track: this is what narrow-minded people call, in the firſt caſe, acting with timidity, and in the ſecond, acting with temerity.

Celſus was of opinion, that there ought to be, in a phyſician, a certain quality, which can neither be named nor eaſily underſtood. This undefinable ſomewhat of Celſus, is what conſtitutes the difference between two phyſicians, who have had the ſame education, have ſeen the ſame caſes, have, in ſhort, had the ſame opportunities of acquiring knowledge, and yet the one ſhall infinitely excel the other. It was this ſomething which made the difference, Martianus perceived between himſelf and Galen, and which induced him to ſay to him one day, when he met him at Rome, '*I have read* '*the Prognoſtic of Hippocrates as thou haſt, why then* '*cannot I prognoſticate ſo well as thou?*' This power, that Paracelſus ſought for in the planets, and Lentilius in his ointments, was the Genius which neither of them poſſeſſed. We hear it objected, however, every day, that the moſt learned phyſicians are the leaſt ſucceſsful in their practice. I ſhall anſwer this objection in the courſe of this work. I will allow here, that in many caſes, the moſt learned phyſician is of little conſequence.

A phyſician, who has no other erudition than what depends on the memory, may know much, and yet be very ſtupid: and, as the practice of phyſic depends wholly on Genius, it will of courſe happen, that a ſtupid man, though a man of learning, will be a very indifferent phyſician. Why do phyſicians, who are only half-learned, or without ſcience; and, even people, who are in no way phyſicians, perform every day wonderful cures? Is it, becauſe they have Genius? It is certain, that a number of circumſtances may concur to favour the application of an unknown remedy. But can it be ſaid, that people who adminiſter it at random, and who know not why, or in what circumſtances it ought to be given, owe their ſucceſs to Genius? No, ſurely. They continue to be as ignorant as the people who employ them.

I am willing to allow likewiſe, that Genius does not always ſupply the place of erudition, nor even of experience. But ſince it clearly appears, that, with the ſame education, the ſame knowledge, and the ſame opportunities of ſeeing the ſick, a phyſician who has Genius, will be infinitely ſuperior to another who has not; and ſince, in doubtful caſes, many reſources are to be derived from Genius, and, that without it, we cannot have experience, ſurely, a man, to be a great phyſician, has no occaſion to be grey-headed, if he has Genius. A young phyſician of Genius, who has had a very few years practice, may, therefore, ſay to one, who has practiſed fifty years, without Genius, "I am able to ſhew you, upon occaſion, that, which Alexander, at twenty years of age, aimed at proving to Demoſthenes, when he ſaid, "*He treated me as a child, when I was in Illyria, and as a young fellow, when in Theſſaly; but I will prove to him, in the very boſom of Athens, that I am a man*".

Although it is impoſſible to create the art of Phyſic, as Paſcal did *(d)* Geometry, in ſtudying it; yet,

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*(d)* This alludes to an anecdote related of Paſcal, but which is, by many people, conſidered as fabulous. Without his having

yet, we may be aſſured, that the phyſician is formed by Nature, as well as the geometrician, the politician or the military man. We ſee the man of Genius ſucceed, on the firſt attempt, with the ſame certainty, as if he had experience on his ſide. Friend obſerves, that, notwithſtanding all ſtudies, no man will be a great phyſician, who is not born ſuch in a certain degree. We may read the beſt medical obſervations, without being informed of all the difficulties, which will preſent themſelves in our practice; and we every day ſee, that it is rather by Genius, we judge ſoundly of circumſtances, than by extenſive reading.

Ordinary minds proceed ſlowly in acquiring knowledge; whereas, men of great Genius advance in it, with rapid ſteps. Proſper Alpini was only thirty years of age, when he returned from Egypt, where he had collected all the materials of his immortal work. Sydenham was born a phyſician. After paſſing ſome time at Oxford, he retired from thence to avoid the troubles of the civil wars. It was about this time, that he formed an accidental acquaintance with a celebrated phyſician, who attended his brother; and it was by the perſuaſion of this phyſician, that determined Sydenham to the

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having had any previous knowledge of the mathematics from books, his father is ſaid to have found him, when very young, working with charcoal upon his chamber floor, and in the midſt of figures. He aſked him, what he was doing? I am ſearching, ſays Paſcal, for ſuch a thing; which was exactly the thirty-ſecond propoſition of Euclid.

practice of phyſic, in which he afterwards became the rival of Hippocrates. Baglivi, who died at the age of thirty eight, was the reſtorer of true phyſic, and the ſcourge of all the ſects that were formed in Europe. From his very youth, he merited his reputation. He only wanted a little more time, to attain the higheſt degree of perfection, and to perceive, that every man may occaſionally be deceived. It was to mere chance, that phyſic owed the celebrated Boerhaave: he was reproached with Spinoziſm, and he became a phyſician. Boerhaave poſſeſſed all the qualities eſſential to the forming a great phyſician, without knowing it. Sydenham knew that he could become ſuch, but without ſeeming to value himſelf the more on the account.

It has already been remarked, long before my time, that the increaſed number of years and patients, only ſerve to remove phyſicians, deſtitute of Genius, farther from true phyſic. The more their practice is augmented, the more numerous and conſiderable are their errors. On the contrary, we obſerve, that, by Genius, a phyſician is enabled to penetrate the greateſt difficulties, even from his youth; and that, with this to guide and ſupport him, he riſes ſuperior to every obſtacle.

Such are the advantages and the prerogatives of Genius; and yet, with all theſe great and amiable qualities to recommend it, I fear, that it is too often overlooked and neglected, in young perſons, who devote themſelves to the ſtudy of phyſic. I have, in many univerſities, ſeen ſtudents held in little conſideration, and who had drawn on them the ill opinion of their examiners, only by a taciturnity, which they very prudently preferred to giving ſuch anſwers, as they well knew would not meet with the ſanction of thoſe, who interrogated them. Inſtead of ſupporting the diffidence of a young man of promiſing Genius, they very often ſacrifice him to his own talents; and he is blamed and diſgraced, becauſe he has dared to think differently from his maſters. A man muſt poſſeſs Genius and talents himſelf, to diſcover and protect them in others.

CHAP.

## CHAP. II.

### *Of the manner, in which a Phyſician ought to conclude from Analogy and Induction.*

THE information we derive from each truth we diſcover, is a ſort of twilight, which leads us to the diſcovery of other truths. To judge ſoundly of any particular caſe, with which we are not as yet wholly acquainted, it will be right to compare it with other ſimilar caſes; and then, to conclude on that, which is hid and unknown to us, by what we obſerve of that, which is known.

The affinities, we diſtinguiſh by ſuch a compariſon, will enable us to perceive the degrees of probability; and theſe again will, in many caſes, lead us to the truth. Moſes Ben-Mendel conſiders probability, as the moſt neceſſary of all the parts of our knowledge, becauſe, when taken in its higheſt degree, with reſpect to our confined underſtanding, it has drawn, from ſceptics the aſſent they refuſed even to truth; and, in many caſes, it ſtands us in the ſtead of certainty.

The phyſician may be ſaid to reaſon from Analogy, when he forms his concluſions from a compariſon of the paſt and the preſent, and that which is likely to happen. In the obſervation of particular caſes, he has recourſe to all the information he can acquire from analogous caſes.

Diſeaſes are frequently ſo obſcure, their revolutions ſo complicated, and their event ſo doubtful, that a phyſician is often obliged to gueſs, before he has had an opportunity of ſeeing properly; and to haſten to the application of remedies, before he can really know the nature of the diſeaſe. In ſuch a caſe, therefore, he aims at finding out the higheſt degree of probability; and he does this, by attentively comparing the diſeaſes before him, with others which have afforded ſimilar ſymptoms. Sometimes he will even be obliged to preſcribe a method of cure, only becauſe he has ſeen it ſucceſsful in other ſimilar caſes.

It ſeems to be agreed, that men in the earlier ages, muſt neceſſarily have reaſoned on the following principles. They obſerved, that they, who died, had been guilty of ſome irregularity; and to this, they naturally aſcribed the fatality of the diſeaſe. They remarked, on the other hand, that they who recovered, conducted themſelves after a particular manner, or did ſomething they were not accuſtomed to do in health. Hence they concluded, that in this the patient had found his cure. In the firſt caſe, they, therefore, endeavoured to avoid what had ſeemed to do harm, and they recommended to others, in caſes ſimilar to the ſecond, what they had found to be uſeful; and, in this way, they, by degrees, came to have remedies for particular diſeaſes, when they had repeatedly ſeen their good effects.

It was from conſiderations of this ſort, that the Babylonians and Chaldeans expoſed their patients in the ſtreets, that paſſers-by, who had ſeen or experienced ſimilar complaints, might inform them how they were cured. This cuſtom continued during many ages in Aſſyria, and even amongſt the Luſitanians and Aſturians.

Phyſic was, in its beginning, ſo much founded on Analogy, that Melampus did not preſcribe hellebore to men, till he had obſerved, that goats, who ate of it, were purged by it; and the ſalutary hemorrhages, in acute fevers, ſeem to have tempted men to the firſt trial, of what an artifical evacution of blood would do: and hence the invention of blood-letting. The firſt operation in this way is aſcribed to Podalirius.

Hippocrates was the firſt, who joined Analogy to a ſevere logic. Thoſe of the empirics, who openly condemned all reaſoning, ſecretly adopted it.

Analogy certainly affords many advantages, when we ſubmit it to the laws of a ſevere logic; and conjecture, or form a judgment, on what is ſimilar, only from that, which is evident to our reaſon and ſenſes. In this way, Analogy will enable us to gueſs, and even to prognoſticate; but we ought to do this, only from the greateſt degree of probability, that Analogy is able to afford.

Uncertain marks, together with affinities, which others have not diſtinctly perceived, are very often the means, by which, a man of Genius paſſes from the known to the unknown. He examines theſe marks and affinities, till the knowledge of ſimple and compound caſes, enables him to conclude on the reſemblance of the whole, from the ſimilitude of its parts.

The man of Genius alone is able to determine within himſelf the degrees of probability; and hence it is, that he alone can become a great miniſter, a great warrior, or a great phyſician: ſuch a man knows how to doubt, when he perceives, that the reaſons, why any particular thing ought to be believed, are of little value; and, on the other hand, he knows how to act when there is greater reaſon for certainty than for doubt. Men of little minds are not ſuſceptible of doubts of this ſort; and they, who do nothing but doubt, are incapable of acting like men of Genius. M. D'Alembert conſiders the Genius, which diſtinguiſhes the truth only, when it ſtares him, as it were, in the face, as being infinitely inferior to the Genius, which diſtinguiſhes it, not only when near it, but perceives it afar off, by its ſlighteſt and moſt fugitive marks. This ſeems to be the reaſon, why great mathematicians have never been great phyſicians.

The advantages of Analogy extend to all objects, that are not ſufficiently clear of themſelves. A thick cloud is ſpread over Nature: this begins to open itſelf, and diſſipate, the moment we are able to perceive ſome of the phenomena, together with their connexion, and cauſes, ſo far as we can judge, from the effects. We proceed from theſe parts that are known, to other new ones, which preſent themſelves. Analogy, by means of certain general principles, enables us to combine together an infinite number of particular phenomena, that are very diſtinct from each other. We conſider Nature by Analogy, either by diſcriminating or by comparing the phenomena, when it is impoſſible to know her internally. The diſtinctions themſelves are not always obſcure, but the cauſes of them are very often ſo. Lord Bacon obſerves, that Analogy is the great chain of Nature, and the baſis of all the ſciences.

Theſe are the ways, by which a phyſician dives into Nature, and in this manner it is that he applies known principles. Lord Bacon obſerved, that meat becomes ſooner putrid in one cellar than another: and hence, he thought, that this fact might lead us to aſcertain the greater or leſs ſalubrity of the air, in different places and habitations; and that, from Analogy, we might extend this inquiry to the ſeaſons. Thierry has very properly obſerved, that every phyſician will find, in the province he reſides in, phenomena, which will agree with what have been ſeen in other countries, and in different climates. He will therefore naturally ſay to himſelf, " If this thing has happened in ſuch a place, ſurely, from the affinity I ſee before me, I may be permitted to deduce, from ſimilar principles, ſimilar conſequences". From the ſenſible difference he obſerves in other things, and which depends altogether on cauſes, that are inſeparable from the climate, in which theſe effects occur, he will conclude, that they will never be perceived in his country.

It is from Analogy only, that a phyſician can be led to a choice of remedies, in any new or doubtful caſes; he will do this, by comparing the diſeaſe preſent, with other known diſeaſes; and then will adopt the ſame remedies, which have been the moſt uſeful in thoſe which are found to have the greateſt affinity to it. Experience proves to us, that many diſeaſes, though they vary in their ſituation, are of the ſame nature, and agree with each other in their progreſs and ſymptoms, and likewiſe, in their indications and mode of termination, ſo that conſequences may be drawn from the one to the other. This was Baglivi's opinion; and he thought, that ſuch a method might be adopted, not only in diſeaſes of a ſimilar nature, but likewiſe in many, which eſſentially differ from each other; and this, by reaſon of the particular depravation they occaſion in the fluids; a depravation, which is really the ſame in theſe diſeaſes, however much they may differ in other reſpects. It may be ſeen likewiſe from this, how the phyſician may chooſe his remedies in doubtful caſes.

Analogy likewiſe enables us, to diſcover particular methods, in the moſt unuſual caſes. Lord Bacon obſerves, that phyſicians ought to aim at exciting, by the movements they are able to excite, other movements, of which they are not the maſters. Thus, for example, the ſenſe of ſuffocation that takes place in hyſterical paſſion, ſometimes gives way to the diſagreeable odour of a burnt feather.

Many phyſicians have been of opinion, that the meaſles may be inoculated as well as the ſmall pox. Dr. Bromm is one of the advocates for this method. Profeſſor Monro aſcribes the good effects of inoculating the ſmall pox, to the infection's being carried into the blood by the abſorbing veſſels without its paſſing through the lungs: the ſame writer likewiſe recommends it to us in the meaſles, which are ſo dangerous for the lungs, to collect the miaſmata on cotton, and to inoculate with this. Dr. Mutzel, of Berlin, was the firſt, who thought of inoculating the itch: and Dr. Toggenburgher, a Swiſs phyſician, has made the caſe, in which this method was tried, the ſubject of a very ingenious diſſertation; of which I have given a ſecond edition. This inoculation, in the ſpace of three weeks, reſtored the patient from a deep melancholy (e). An Hungarian phyſician was deſirous of inoculating even the plague.

Expe-

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(e) Profeſſor Sandifort has given Dr. Toggenburgher's work a place in his Theſaurus. The caſe is ſo intereſting, that I believe the reader will not be ſorry to ſee it here. The patient was a man of twenty-eight years of age, of a melancholy temperament, and, by trade, a ſhoemaker. Some family miſfortunes, were conſidered as the occaſional cauſes of his complaints. He became melancholy, averſe to his buſineſs, and, after ſome time, had a wildneſs in his looks, and either gave indirect anſwers, or kept an obſtinate ſilence. Many remedies were tried to no purpoſe. He every day grew worſe, and more emaciated, and was, at length, placed under the care of Dr. Mutzell, in the royal hoſpital at Berlin. He was, at this time, inattentive to every thing about him; he ſat in bed, with his eyes fixed, and was ſo great a ſtranger to hunger or thirſt, that three or four days continued abſtinence did not excite him to ſeek for food. His pulſe was ſlow and weak.

Neither

Experience proved, that dropſical people fell into ſyncope, if too much water was drawn off, at one operation. Cælius Aurelianus, therefore, invented the uſe of a bandage, in theſe caſes. Littre has renewed this method, and it has been adopted by Mead. (*f*) We obſerve, that ſcorbutic patients are liable to a total privation of ſtrength, if they remain

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Neither external nor internal ſtimuli ſeemed to have much ſenſible effect on him. Whipping with nettles hardly excited any ſenſe of pain: and twenty grains of emetic tartar, produced only one fit of vomiting. Neither bliſters; nor plunging him in cold water; nor a ſtream of cold water; nor plates of ice applied to his head, were able to occaſion more than a momentary uneaſineſs. In this ſtate he continued two years, and it was then determined to inoculate the itch. For this purpoſe, deep inciſions were made in the arms and legs, and the wounds were filled with itchy matter. He did not ſeem to mind the operation; but, on the ſecond day the pulſe was ſtronger, and on the fourth, was ſo much increaſed, that Dr. Mutzel doubted, whether he had ever felt a quicker pulſe. This degree of fever continued during the fifth and ſixth days, accompanied by great anxiety and difficult reſpiration. On the two following days, the fever abated, the ſkin became moiſt, and a number of ſmall red puſtules were thrown out upon the ſurface. On the ninth his ſpeech and reaſon returned to him. He did not ſeem to know any thing of what had paſſed during the time of his being in the hoſpital. In three weeks the puſtules were dried away, and he was in perfect health. The inoculation of the itch is, however, no new operation. Zacutus, Luſitanus, and Etmuller, long ago recommended the wearing an infected ſhirt, to bring back the eruption of the itch, in caſes, where its ſudden diſappearance had done harm; and we ſee ſeveral inſtances of the good effects of ſuch a method, related by writers of the beſt credit.

(*f*) None of our Engliſh ſurgeons, I believe, now think of performing the operation of the paracenteſis, without making a ſuitable compreſſion on the abdomen, but they almoſt all of them long in a chair, when their diſorder is in a conſiderable degree: and this proſtration would prove fatal, if they were not ſpeedily to be relieved, by being placed in an horizontal poſture. Reynolds, an Engliſh ſurgeon, very properly concluded, from obſervations ſimilar to this, that ſcorbutic and other enfeebled patients, might be relieved by tight bandages, ſo that every poſition of the body might become ſupportable, inſtead of its being dangerous.

In caſes of aſcites, the ancients rubbed the patient with oil. Dr. Oliver, of Bath, has lately renewed this method, and recovered by it a number of patients, who were given over. Dr. Tiſſot approves of this practice, and thinks it will ſometimes be of uſe; but he apprehends, it will be more advantageous in incontinence of urine or diabetes, becauſe the pores abſorb too much humidity from the air. He is of opinion, likewiſe, that cantharides applied externally, would do no harm in diabetes; becauſe they increaſe the inſenſible perſpiration, diminiſh the abſorption of the pores, and add to the acrimony of the urine. Now, it is well known, that in diabetes, the urine is without acrimony, and flows with great eaſe. There can be no doubt, but, on many occaſions, diabetes is occaſioned by ſome diſorder in the functions of the ſkin and the action of cantharides will be likely to remedy this inconvenience.

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them place the patient in a chair, during the operation; and even Mr. Sharpe recommends ſuch a poſition. An horizontal poſture, however, will be found to be much more ſafe and advantageous.

Analogy, ſometimes, points out improvements, which, at firſt view, ſeem to be merely matters of ſpeculation, but which do the leſs deſerve to be tried. Lord Bacon aſks, if ſome inſtrument might not be contrived, which, when applied to the ears might facilitate the hearing, as much as ſpectacles do to the ſight. Such an inſtrument is now found.

Dr. Short relates a wonderful hiſtory of a man, who became conſumptive, and who had his body covered with ulcers. This patient, ſays he, was perfectly cured, by means of the elixir of vitriol, and the uſe of the cold bath. Short was deſirous of ſeeking the cauſe of this cure, in the increaſed preſſure of the air: this, however, can never be allowed; and yet, we find, Short, after having eſtabliſhed, as he thought, his hypotheſis, go on, to propoſe a cure for hydrophobia, from Analogy; and this he would do, he tells us, by letting the patient down into the ſea, to the depth of ten feet; becauſe then, he ſuppoſes, the weight and preſſure of the water, will be ſufficient, by bracing up the ſolids, to promote and increaſe the urinary diſcharge and perſpiration, and thus carry off the poiſon. It is in this way, he explains the good effects of bathing, after the bite of a mad dog, and which ſeldom fail, according to him, if taken in time, before the dread of water comes on; but the field of conjecture is boundleſs.

It having been remarked, that a certain lady, who, for wiſe reaſons, had a mercurial plaſter on a particular ſpot, after ſalivation, being attacked with the ſmall pox, the eruption appeared every where, except under this plaſter. M. Malouin, who relates this fact, aſks, if it would not be poſſible, to obviate the ſmall pox by ſimilar means. The experiment has not, indeed, yet been made in its full extent; but a method has been deduced, from this hint, to preſerve, at leaſt, the faces of the ladies, from the impreſſions of the ſmall pox. Dr. Van Roſen covered the face of one of his patients, with a mercurial plaſter, and the eruption did, indeed, appear every where, excepting on the face. Dr. Sulzer, of Winterther, has lately made a ſimilar trial, and with the ſame ſucceſs. He had the precaution to open the puſtules on the arms, thighs, and legs: and, in this indeed, he followed the advice of Dr. Van Roſen, as the ſureſt means of diveſting the ſmall pox from the head. This invention is of the greateſt importance to the ladies, many of whom had rather loſe their liſe, than their beauty.

Linnæus tells us, that Analogy is very uſeful to botaniſts, the obſervations of affinities often leading them to the knowledge of plants. Tennent found a root *(f)* in Penſylvania, which the Americans conſidered as an infallible ſpecific againſt the bite of the rattle ſnake. He obſerved, likewiſe, that this root was very uſeful in inflammatory diſeaſes. The phyſicians, at Paris, were led to think, that the *polygala*, from its reſemblance to this plant, might, perhaps,

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*(f)* An Epiſtle to Richard Mead, M. D. concerning the efficacy of the ſeneca, or ſnake root. By John Tennent, M. D. Edinburgh, 1742, 8vo.

perhaps, poſſeſs the ſame virtues; and experience confirmed the propriety of their conjecture.

Linnæus farther informs us, that all plants, of the ſame genus, agree in their virtues; and that all theſe, which are of the ſame natural claſs, have a ſimilar affinity. As a natural ſyſtem of plants, has never yet been eſtabliſhed, Linnæus tells us, we are not to be ſurprized, if, in certain of his claſſes, we meet with plants of very oppoſite virtues; but that it would be poſſible to arrange them, according to their natural claſſes, were we previouſly informed of their virtues from experiments. This is the reaſon why, he thinks, that, as the *acmella*, of Ceylon, is of ſo much efficacy in ſtone caſes, it would be worth while, to try the virtues of the *ſigeſbekia*, which is, at preſent, ſo much neglected; but which, from its reſemblance to the *acmella*, would be likely to be as uſeful as that is.

On ſimilar principles, Linnæus is of opinion, that the dark colour of a flower, and, in general, the melancholy aſpect of a plant, render it ſuſpicious; and that, on this account, we ought not to eat the black berries of an unknown plant, till we have proved them, by experience, to be innocent. He conſiders the black colour of all berries, as a mark of poiſon: there are, however, ſome exceptions to this rule. The wild mulberry, and myrtle berries, are neither of them hurtful. (*g*).

There

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(*g*) Linnæus has laid down many general poſitions in the virtues of plants, derived from their colours, taſte, and ſmell.

Thus,

There will, in many caſes, be an inconvenience, in concluding from Analogy, when the reaſons, which we conſider as the baſis of a truth, have but little probability: this we call opinion. Thus it often happens, that we miſtake probability, for truth; and opinion, for certainty. We either do not properly diſtinguiſh the degrees of probability; or elſe, we ſee reſemblance, where there really is none. Galen has very properly obſerved, that many things are hid from reaſon and the ſenſes, by a variety of cauſes. This is the reaſon, why every man, who is a friend to truth, ought not to wander, from what is clear and certain, in his ſearch after that which is unknown; nor form his opinion of that which is unknown, from that which is clear. Whoever acts in this manner, will either doubt, as the ſceptics did, of every thing that was known,

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Thus, a yellow colour, he tells us, generally denotes a bitter taſte; as, in gentian, aloes, and celadine.

Red indicates a ſour taſte; as, in currants, raſpberries, mulberries, cranberries, roſeberries, and ſea buckthorn. Plants that become red in the autumn have likewiſe a ſour taſte; as, ſorrel, and wood ſorrel.

Green indicates a crude alkaline taſte; as, in leaves and unripe fruits

A pale colour indicates an inſipid taſte; as, in endive, aſparagus, and lettuce.

White denotes a ſweet taſte; as, in white currants, plumbs, ſweet apples, &c

Laſtly, black indicates a harſh, nauſeous taſte; as, in the berries of the deadly night ſhade, herb chriſtopher, and others.

With reſpect to the taſte and the ſmell of plants, he obſerves, that ſapid and ſweet ſmelling plants, are generally innocent; and that ſuch as are nauſeous, and of a rank and diſagreeable ſmell, are hurtful. *Philoſophia Botanica.*

on account of that which was unknown; or, he will approve, as many of the dogmatiſts did, of the unknown, from what is known.

Every concluſion, that is founded on Analogy, will be liable to be erroneous, unleſs it is drawn from the moſt exact reſemblance of the affinities. This is the reaſon why, we, in vain, expect the ſame effects to take place, in caſes, which are, perhaps, widely different from each other. We muſt previouſly be informed, of the properties of objects; and likewiſe be acquainted, with all the circumſtances, before we can be able to compare them. If we wiſh not to be deceived, we muſt reaſon with preciſion.

The moment we learn from experience, that ſuch or ſuch a thing leads to a certain end, we are too apt to imagine, and often, without reaſon, that we can attain it in every caſe. This precipitation leads us only into error. As Man is, in general, rather an animal of habit, than reflection; or, according to Wolf, his prudence conſiſting wholly in the imitation of the actions of others, or, of his own preceding actions; he does not give himſelf time to inquire, whether, in the caſe before him, and on which, he is forming a concluſion, there is not ſome particular circumſtance, which is not to be met with in the other. He ſays to himſelf, without heſitation: This method ſucceeded in a ſimilar caſe, and ought therefore to do ſo in this, and in others of the ſame kind: I get well, without taking any medicine, and I ſhall always be able to do the ſame. Leibnitz obſerves, that this kind of experience in beaſts, ſtands them in the ſtead of reaſon. He might have ſaid the ſame thing of the greater part of mankind.

Although Phyſic is really an uncertain art, and phyſicians, eſpecially if they are men of Genius, are, in a number of caſes, more undeciſive, than little minds; yet, this ſcience, which Lord Bacon, in his time, conſidered as the moſt difficult of all others, appears, however, to be ſuperior to the reproaches of Sextus, Leonard of Capua, and others, who have copied them.

A Genius, of the firſt order, diſtinguiſhes between a certainty, properly ſo called, and a certainty, from experience. This diſtinction, which we owe to M. D'Alembert, removes the objections made by Lord Bolingbroke, againſt Induction; which, doubtleſs, leads only to a degree of human knowledge, and not to perfect knowledge. We have done every thing in our power, when, in theſe doubtful caſes, we adopt principles, which are founded on experienced certainty; although, the reaſonings, we deduce from them, are only probabilities. Theſe probabilities are not to be deſpiſed, if they are drawn from experienced facts, to which we have been led by the ſenſes; becauſe, they have then a right to be eſtabliſhed, as ſo many fundamental propoſitions. A medicine, which has often been uſeful in a caſe, and in circumſtances, ſimilar to theſe, of the caſe before me, will, probably, be uſeful in this. But, if I have not ſeen it tried in theſe caſes, my conjecture, will be only a chimæra.

mæra. We ought, therefore, on ſuch occaſions, to reaſon only from experience.

Phyſic, in its ſtricteſt ſenſe, may be ſaid to afford certain principles, if we are careful not to include, what is doubtful and uncertain; or, to confound the falſe with the true; or, miſtake the appearance of truth for truth; or, in one word, if we do not lay to the charge of phyſic, what ought to be imputed wholly to the errors of the phyſician.

All that the ingenuity and induſtry of the beſt obſervers, have delivered to us, on the ſubject of health, and the means of preſerving it; together, with all that has been ſaid by them, on the nature of diſeaſes, and the means of palliating or curing them; and likewiſe, on the qualities and effects of medicines; and, in general, concerning all, that is likely to be uſeful, or hurtful, to man: all this, I ſay, is true and certain. Our reaſonings are equally certain, when we are ſure of not having formed any concluſion, that is improbable or uncertain, from what we ſee of the diſeaſe, and the effects of the remedies, employed in it. It is Genius alone, that can give us this juſtneſs of reaſoning; and, it is the art, of which I am now going to ſpeak, viz. Induction, which leads to this preciſion.

We owe all our knowledge to facts, and to Induction, or the art of reaſoning, on thoſe facts. We have no occaſion to go in ſearch of principles; becauſe theſe, will ſeem to preſent themſelves, as it were, of their own accord, if we are capable of properly obſerving facts. Obſervations, that are made with preciſion, will lead to concluſions of equal juſtneſs; and theſe, again, will afford us principles, or propoſitions, which will require no farther proof.

I have already ſaid, that it is the buſineſs of Genius to analyſe, arrange, and combine our ideas; and to derive from them, certain concluſions. Lord Bacon pointed out the way, to a knowledge of facts; and Deſcartes, the way to combine them. The Engliſh philoſopher ſhewed us the truth, although it was afar off; whereas, Deſcartes, in many caſes, led us immediately into error. It is, therefore, very eaſy to form reaſonings, when we are poſſeſſed of Genius; but, with the ſame facility, we ſhall form falſe reaſonings, if we have ſeen things improperly, or only in part, or not at all.

In order to ſucceed in medicine, we ought to combine the dogmatical, with the hiſtorical part of phyſic, and the application of facts, with the certain knowledge of them. Hippocrates, long ago, obſerved to us, that our reaſonings, only led us into difficulties and embarraſſment, if they are founded, wholly, on chimerical ſuppoſitions, and not on the moſt exact Induction. Lord Bolingbroke conſiders one error, as a ſtep, which leads us on to another, and ſo to many more. However juſt our reaſonings and compariſons may be, in themſelves, it is certain, they all lead to falſe concluſions, if the firſt ſtep is erroneous.

The explanation of a fact, ought to flow immediately from the fact itſelf. This explains why, in reaſoning from Induction, we ought not to proceed, by comparing ideas with ideas; but ideas, with the objects we are obſerving. Locke has very well remarked, that, by means of Induction, we arrange thoſe parts of the chain of ideas, which we have diſcovered, with a ſuitable preciſion; and that, by means of this order, the dependence of the parts, and the point of their combination manifeſt themſelves; and, conſequently, the truth at the ſame time. The mode of reaſoning from Analogy, does not lead ſo far as this by Induction; becauſe the connexion of the affinities is leſs clear, and the concluſions leſs certain, than thoſe we infer from Induction. In Analogy, we enumerate only ſome of the parts; whereas, in Induction, we include the whole.

Induction informs us, therefore, of much more than ſimple obſervation. The latter enables us to perceive, only that which is ſubmitted to the ſenſes; whereas, Induction leads us to every thing, the mind is able to embrace. Our diſeaſes ſeldom fall under the ſenſes; it is, therefore, the buſineſs of the mind, to aſcertain the cauſes from the effects, becauſe the ſenſes are inſufficient for this; and, in this way, Induction will inform us of that, which could not be acquired from ſimple obſervation.

We therefore make uſe of Induction, when we wiſh to ſee farther, than we can do, by means of the ſenſes; when we aim at forming the parts, we collect together into a whole; or when, from a multiplicity of particular and certain facts, we wiſh to eſtabliſh a general truth. In the greater number of ſciences, individual obſervations are the parts of theſe generalities; and the conſequences, which we have derived from them, and which lead to new diſcoveries, and to the eſtabliſhment of data, form the whole of theſe general principles. The more great and important, the enumeration of the parts is, from which the conſequences are drawn, the more certain and inconteſtable will be the concluſions.

Induction may be conſidered as the path, which leads from the known to the unknown; becauſe, by its means, ſomething new is inferred, and which obſervation had not taught. By means of Induction, we likewiſe paſs from obſervations and experiments, to luminous principles; and from theſe, again, to new experiments, and more elevated truths. In this manner, we are enabled to generalize particular ideas, and, at length, to do this, in the moſt extenſive manner. Induction ſeems to combine the practical examination of nature, with ſpeculation; and experience, with reaſon. The more we have collected of exact and perfect obſervations, and the more we poſſeſs of that natural acuteneſs, which, at once, embraces and diſcovers the affinity and dependence of an idea, the more perfect will be the Induction, from which we conclude; when we have arranged our obſervations in ſuitable order, and put aſide all that is variable and uncertain. Induction affords the true means of bringing conviction and certainty to the ſciences.

In ſhort, by way of recapitulation, I will obſerve, that a phyſician poſſeſſes the true Genius of his art, when he does not confine himſelf to ſimple obſervation, nor reaſons before he has obſerved; when he derives his opinions through the readieſt channels, and without heſitation; when he combines with the greateſt exactitude, the paſt, the preſent, and the future; and when he thinks with equal quickneſs and juſtneſs.

After the obſervation of the phenomena and ſigns, it is ſometimes poſſible to aſcend even to the cauſes. The phyſician ought to aim at doing this, by a careful and attentive compariſon of the cauſes, with the effects. If the cauſes he aſcertains, agree with the effect he obſerves, he then ſeeks for the method of cure; and, carefully obſerving the courſe of the diſeaſe, and the effects of the remedies employed, he draws from all theſe, certain data, which will be applicable to other ſimilar caſes.

Induction then is the guide, by which, the man of penetrating Genius, is conducted into the hidden walks of Nature, with more certainty than Analogy; and much farther, than the ſenſes will enable him to do. The whole art of Phyſic depends on this mode of reaſoning; but it is only the man of Genius, who will be able to embrace it.

## CHAP. III.

## OF THE INQUIRY AFTER THE CAUSES.

### SECTION I.

### *Of the errors committed on this head.*

THE Reader will have ſeen, from what I have ſaid of the talent for Obſervation, how the phyſician forms to himſelf clear ideas of effects. Genius compleats that, which the talent for Obſervation has begun: it traces the cauſes by the effects.

We ſhall be unable to trace the cauſe from the effect, or to diſtinguiſh any order, in a complication of ſymptoms, unleſs we poſſeſs a certain degree of penetration, neceſſary to enter into each particular circumſtance, and to follow each phenomenon to its moſt hidden receſs. He, who has once perceived, as it were, the foundation of a diſeaſe, ſees all its circumſtances refer to this point, and furniſh each of them with ſome new light; he ſees, likewiſe, each phenomenon aſſiſt, as it were, to develop the reſt; and in this manner, the whole diſeaſe

eaſe preſents itſelf to him, as the effect of one or more cauſes; all of which, he aſcertains without difficulty. But it is Genius alone that can make theſe diſcoveries; without Genius, no man will ever perceive the affinity there is between effects and their cauſes. It is more eſpecially, by the diſcovery of the cauſes, that the Genius of a phyſician manifeſts itſelf.

This readineſs to aſcertain the cauſes, conſtitutes that truly philoſophical Genius, which, not ſatisfied with knowing that things are ſo, aims at learning why they are ſo, when it is poſſible to diſcover the reaſon of this. The vulgar, on the other hand, very rarely ſee things as they really are, and know ſtill leſs, why they are ſo.

A phyſician, who knows not the cauſes of a diſeaſe, or who cannot determine its poſſible cauſes, with the higheſt degree of probability, will never be able to cure the diſeaſe. In this knowledge lies the philoſophy of phyſic, and every phyſician, who poſſeſſes it, is truly a philoſopher. Hippocrates, therefore, did well to ſay, that philoſophy and phyſic ought to be combined together. The knowledge of cauſes, is very juſtly conſidered, as the moſt difficult of all our acquirements. We may judge from hence, how difficult it is to determine the cauſes of diſeaſes; and, on the other hand, how eaſy it is to acquire only a falſe experience, when we are in want of a proper Genius. As it is only, by much the ſmaller number of phyſicians, who poſſeſs this talent, Stahl ſeems very properly to have obſerved, that, of all the branches of phyſic, Pathology, or the knowledge of the determinate cauſes of diſeaſes, and their effects, is the moſt neglected, and the leaſt known.

A man of a narrow underſtanding, who is deſtitute of this truly philoſophical ſpirit, this Genius, which is ſo eſſential to the art of phyſic, will never diſcover theſe cauſes. Confined within the narrow circle of his ideas, he will fall from one error into another. Sometimes, he will miſtake the whole of the diſeaſe for a ſymptom, or a ſymptom for the diſeaſe. He will ſometimes ſee, or fancies he ſees, cauſes, which have really no exiſtence; or, he will confound the effects of his remedies with the occaſional cauſes, and *vice verſa:* and thus, in his ideas of the diſeaſe, and of the indications of cure, he will commit error after error. Now and then, he will have the credit of having atchieved an important cure; although he was, perhaps, called in, to preſcribe at a time, when nature was triumphing over the diſeaſe, or when it no longer exiſted. Practitioners of this ſtamp, are to be included amongſt the vulgar. They can never be capable of deducing a juſt principle, from the beſt Obſervations; or, of eſtimating the nature and influence of the cauſes, from the effects they excite.

The vulgar examine nothing, and the philoſopher is very often aſked to explain to them an effect, the cauſe of which ſeems naturally to preſent itſelf. If the effect is inexplicable, the ignorant think they have a right to deſpiſe the man of Genius, in favour of the ſtupid and illiterate practitioner, on whom they laviſh all their praiſe, becauſe he flatters their prejudices and blindneſs. Theſe people, however, do not reflect, that it is neither from pride, nor from want of Genius, that the philoſopher refuſes to explain to them a thing that is incomprehenſible. They ſeem to flatter themſelves in ſeeing perſons, who are conſidered, as they think, on account of their merit, and who are as ſtupid as themſelves. If the philoſopher does, in many caſes, neglect the examination of cauſes, it is not becauſe his Genius does not extend itſelf to every thing, that nature can preſent to him in his inquiries; but he knows, that as nature diverſifies her phenomena *ad infinitum*; and that ſo far from being able to anticipate or determine the way ſhe purſues, it is not always permitted to the human underſtanding to follow her.

The vulgar form an improper judgment of cauſes, becauſe they are unable to develop a compound idea, or to furniſh any demonſtration; for a demonſtration conſtantly ſuppoſes a collection of cloſely combined ideas, of an immediate affinity with each other, together with many individual concluſions. There will, therefore, be more reflection required here, than in a ſimple concluſion. Baron Haller obſerves, that men do not judge erroneouſly, when the queſtion is only of ſimple notions, and that no perſon confounds blue with red; but, that they often miſtake in complex ideas, the eſſence of which conſiſts in the combination of many diſſimilar parts. Men are very often unwilling, to take the neceſſary time and trouble to know the ſimple parts of two combined ideas, when they form a judgment, becauſe they would think themſelves humiliated by this. Thus they abuſe themſelves and others, by pretending to give inſtructions, before they themſelves are informed properly.

Baron Haller has likewiſe proved, that the Will contributes as much as pride and negligence, to render men liable to error. A man combines, for example, two ideas: ſuch as, thoſe of love and hatred, although abſolutely different from each other; and he determines theſe propoſed ideas, not from themſelves, but from other ideas he joins to them: but theſe acceſſory ideas, ſo far from forming a part of the two from which we are to conclude, are abſolutely foreign to them. A phyſician, who is loved, has done preciſely the ſame as another, who is hated; and yet, the latter is condemned, while the former is excuſed.

We ſhall be equally liable to deceive ourſelves, when, before we conclude from two ideas, we wiſh, that one of them may agree with, or be repugnant to, the other.

The determination of the Will, will always prove an obſtacle to the diſcovery of truth. To will that a thing ſhall be, becauſe we deſire it, is to will nothing, ſaid a philoſopher: becauſe, in a thouſand unforeſeen, and even known caſes, we are unable to fulfil any one of our deſires; and beſides, it is abſurd, to will a thing, without knowing the poſſibility of it: although every man may, as Cicero obſerved, judge of things in his own way, yet he is not at liberty to connect together contradictory ideas.

Cicero expreſſes himſelf very forcibly on this ſubject in another place. " I know not," ſays he, " how certain people prefer the giving into error, " by a free determination of the Will, rather than " inquire, whether their opinion is well founded. " Theſe people will, perhaps, tell us, that they " have examined things on every ſide; but I " would aſk, if they were capable of ſuch an " inquiry. If they inform us, that it is the opi- " nion of any particular great name they are fol- " lowing, I am ready to anſwer, that this, per- " haps, may be the caſe; but, at the ſame time, I " would obſerve to them, that to be certain, that " this perſon, whom they quote, is really a great " man, they ought neither to be ideots, nor of " confined underſtandings, but perſons of inge- " nuity. As to our own part, we think we do " beſt, in endeavouring to learn the truth with- " out any diſpute, and with all the care poſſible. " Although all our knowledge is often ſurrounded " with a thouſand difficulties; although every " thing is covered, as it were, with darkneſs, and " there is an extreme weakneſs in our reaſonings, " which has occaſioned the moſt ingenious men to " miſtruſt their abilities, and deſpair of knowing " the things they were in ſearch of; yet they did " not ſtop there, any more than we did. Our aim " is to draw forth truth from the colliſion of diffe- " rent opinions, or, at leaſt, to approach to it by " theſe means. There is no other difference be- " tween us and thoſe, who pretend ſuch or ſuch a " thing, than that theſe people never doubt of the " opinion they have embraced; whereas, we ac- " knowledge only a great number of probabili-

" ties, which we are unable to follow with faci-
" lity; but without admitting them always as
" truths. By this precaution, we are at full liberty
" to judge of things, without being obliged by
" any motive to adhere to any opinion. It is
" either from the weakneſs of age, from complai-
" ſance, or from ſome prejudice, that theſe peo-
" ple give things as truths, of which they know
" not the leaſt poſſibility; and that they adhere
" to their opinions, as firmly as they would to a
" rock, on which they might chance to be caſt in a
" ſtorm. Perſons of this ſtamp merit no advice,
" nor have they any claim to be heard. As a
" celebrated philoſopher has obſerved, it is to no
" purpoſe, to anſwer people who can prove no-
" thing."

Baron Haller compares our Will to fire, and our Genius to light. The former, he ſays, acts with violence; the latter, with mildneſs. I believe I have no occaſion to obſerve, that the Will, ſometimes, leads a man to judge of things, with a moſt unpardonable degree of effrontery. Baron Haller informed me, when I was with him at Gottingen, that the faculty there had been conſulted on the following caſe. A man killed his wife in a garret, and threw her out at the window into the ſtreet. The counſellor, who pleaded for the criminal, had the boldneſs to ſay, that his client had thrown her out at the window, merely to ſend her with more ſpeed to bed.

But more particularly to our ſubject. The difficulty of analyſing a compound idea, is the reaſon, why the vulgar are confuſed at the leaſt diſeaſe or ſymptom, the cauſe of which does not immediately preſent itſelf to them. The leaſt reſemblance they diſcover in it of any other caſe, though it is, perhaps, eſſentially different from the preſent, leads them to preſume all that has been ſaid of that. They put all the other circumſtances aſide, becauſe the compariſon of all theſe would be too difficult; and, in this manner, by a chimerical or forced Analogy, is the diſeaſe to be defined. In brainleſs heads like theſe, ſtrained and diſtorted ideas ſeem to hold the place of all others. Theſe people miſtake the appearance of truth, for truth itſelf. Inſtead of enquiring after all the cauſes of a phenomenon, they take the leaſt of its parts for the whole. A patient gets well, perhaps, with the aſſiſtance of a phyſician; but not without its being ſaid, on many occaſions, that ſomething had been given ſecretly to the ſick; and that, in this remedy, and not in any ſkill of the phyſician, the patient had found his cure. This ſpecific had, perhaps, done no harm, only becauſe it happened to be innocent.

Phyſicians have often been reproached, with not knowing, whether the cure of their patients is to be aſcribed to Nature or to Phyſic. In reply to theſe objections, I will obſerve, that they, who are acquainted with no art, and who take a pleaſure in decrying thoſe arts and ſciences, to which others devote themſelves, do not perceive, or, at leaſt, will not ſeem to perceive, that it is more honorable to cultivate an art well, than it is to cenſure, without reaſon, thoſe who practice it. They,

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who deliver theſe objections, commonly know nothing of the nature either of diſeaſes or remedies; and hence, it is much eaſier for them to aſcribe to chance, what is evidently, at leaſt, in the eye of a man of Genius, to be traced to the remedy or the diſeaſe.

Sometimes, the multiplicity of cauſes is ſo great, that it is impoſſible even for the moſt enlightened mind to unravel them all. A phyſician has done every thing that can be expected from him, when he has traced, with all due penetration and preciſion, the beginning and progreſs of a diſeaſe; and when he has examined the real and poſſible cauſes, with ſufficient accuracy, to eſtabliſh the indication of cure, not from hypotheſis, but from Nature. If, after ſuch a ſcrupulous and attentive mode of proceeding, he fails of ſucceſs, ought he to be reproached with ignorance, becauſe he knew not the particular character of each cauſe, amidſt the great variety and complication we ſee ſo often occur? Who is to be his judge in theſe circumſtances? Shall it be the ignorant vulgar? Yes: it is the vulgar, who claim to themſelves a right of determining theſe matters, of which they have not the leaſt notion. But deciſions of this ſort, are not always confined to the vulgar. I have ſeen men of the beſt parts, give into the ſame error. A patient dies after a long and incurable diſeaſe, and even at an age, which is of itſelf a mortal diſeaſe. No matter. The phyſician is expected to give relief in caſes, which owe their ſource to inſuperable cauſes. No body ever knows, or ſeems to know, that a phyſician is, ſometimes, eagerly employed in reſearches and combinations, even in caſes, which are beyond the boundary of hope. They never once think, of the exhauſted conſtitution of the patient; and they conclude, that the phyſician ſuffered him to die, becauſe he knew not the cauſe of his diſeaſe. If theſe people would calculate the number of years the patient had paſſed in pleaſure and debauchery, and how much theſe might tend to the abridgment of life; and if they had added to this conſideration, the ſlow, and, conſequently, the more dangerous, progreſs of a chronic diſeaſe, ſurely they would have diſcovered many reaſons to juſtify the conduct of the phyſician. I ſay nothing of many other circumſtances of this ſort, which might be mentioned. The opinion, which is commonly formed of the good or ill ſucceſs of a phyſician, proceeds, in part, from an incapacity to analyſe complex ideas, and, in part, from a depraved will. Lord Bacon ſays, that a politician, and a phyſician, have hardly any opportunities of giving inconteſtable proofs of their capacity; that all their credit ſeems to depend on their ſucceſs, becauſe there are but few people who know, whether it is the work of the politician, when the ſtate flouriſhes; or of the phyſician, when the patient dies.

The moſt contemptible man breathing, conſiders a great phyſician as a ſtupid fellow, the moment he ſees him loſe a patient. The wonderful cures that may have been performed by this ingenious man, previous to this, are at once forgotten; becauſe, they ſuppoſe, that a phyſician, who underſtands his buſineſs, ought to ſuffer no man to die. People ſeem, ſometimes, to exult, when a learned phyſician fails in his practice. They are apt to think, that ſuch a one is a dangerous man in his way. Without abilities to diſcern effects, and with ſtill leſs capacity to perceive their cauſes, it is in this manner, that the vulgar decide the merit of a phyſician, whoſe conduct, even in the moſt unſucceſsful caſes, is a prodigy of ſkill, and learning, and prudence. The moſt ignorant phyſician is not always unfortunate: nor is the moſt experienced phyſician conſtantly ſucceſsful. The ſucceſs of a cure, ſometimes, depends on an happy concurrence of favorable circumſtances.

We ſhall be likewiſe liable to miſtake the cauſes, if we aim at judging of things by their event, inſtead of examining all their circumſtances. In the moſt remote and barbarous ages of Ægypt, phyſicians were puniſhed or recompenſed, in proportion to their ſucceſs. But there was ſome exception to this. Puniſhment was never inflicted, when they appeared to have adopted the beſt methods, ſuch as were preſcribed in the writings of Hermes.

The vulgar, in theſe times, ſeem to think, that the cauſe of an effect, is that which has immediately preceded it. All their logic is founded on this principle: this happened after ſuch a thing, of which this is the effect. The lightning is often attracted by the trees, under which a traveller ſhelters himſelf during a ſtorm: therefore, ſay they, the traveller is the cauſe of the lightning's falling on theſe trees.

The eſſential ſymptoms of a diſeaſe, are very often conſidered, by patients of little underſtanding, as the effects of the medicines they take; and therefore, they ſometimes ſuſpect the phyſician to be the cauſe of theſe ſymptoms. Thus, a patient has a pleuritic ſtitch; I direct him to be let blood in the morning; at night his pain is increaſed, and this he aſcribes to the bleeding. Another has inflammatory angina, with a ſmart fever; he ſends for me at the beginning of his complaint, he is able to ſpeak, but not to ſwallow; I order this patient likewiſe to be let blood, and at night he is unable even to ſpeak. He thinks the bleeding has made him worſe. A third patient ſends for me, and I find in him ſymptoms of fever, I preſcribe ſome febrifuge mixture; and, at night, he tells me, that his fever is more violent ſince he took the mixture. No arguments can perſuade theſe weak heads, that their opinions are falſe, ill-grounded, and contradictory.

It is well known, that in the colic of Poictou, when the pain in the bowels has ceaſed, and the patient ſeems to be better, there very often comes on a palſy of the arms or legs. Dr. Tiſſot has had occaſion to ſee this colic in Switzerland, and has very well deſcribed it. In the place I reſide at, it is never ſeen. If any one ſhould happen to be attacked with it, and I ſhould be called in, I have not the leaſt doubt, but that the palſy which might be expected to take place, would be wholly aſcribed to my mode of treatment.

There often occurs, in people advanced in years, an inflammation, either of its own accord, or determined by very ſlight cauſes; and, in the generality of caſes, this inflammation is ſucceeded by death. The diſſection of ſome of the patients, who have died in this way, has proved the cauſe of the diſeaſe to be an oſſification of the arteries, from the foot, even to the great trunk of the aorta. Theſe oſſified veſſels were, therefore, no longer poſſeſſed of their natural mobility; and hence, the cauſes of inflammation and death were evident; and yet, a phyſician, who, to a patient of this ſort, ſhould preſcribe only two grains, a few days before the inflammation took place, would be conſidered as the cauſe of his death.

It very often happens, that patients take only half, and ſometimes not ſo much, of the medicines preſcribed by the phyſician. Theſe doſes being too ſmall to remove the cauſes of the diſeaſe, the patient becomes worſe. I have a thouſand times ſeen this happen, and all the blame thrown on the phyſician.

All the phyſicians, as well ancient as modern, who wrote on intermitting ſevers, before the diſcovery of the Peruvian bark, agree in obſerving, that Tertians or Quartans of long ſtanding, frequently bring on jaundice, glandular obſtructions, and dropſical affection. Since the bark has been brought into uſe, the enemies to this excellent drug, ſeem all to join in attributing to it all theſe ills: and yet, we every day ſee ſevers of this ſort ſucceeded by ſimilar affections, when the patient has taken no bark. Werlhoff has ſeen incurable tympanites follow the cure of theſe fevers, when no bark has been preſcribed, and even when the fever ſtopped of its own accord. It is well known, that enlargements of the liver and ſpleen, which have been improperly attributed to the bark, diſappear by its means. Brunner, Toſti, Werlhoff, and Wepher obſerve, that even dropſical ſwellings have given way to this remedy; and yet, there are phyſicians in Germany, and in other countries, who ſwear, that the bark occaſions obſtruction of the liver and dropſy. If a ſecond diſeaſe ſucceeds to the firſt, the phyſician, who treated the firſt, is conſidered as the cauſe of this other. The Greeks have remarked, that, in their time, the genus and ſpecies of a diſeaſe, ſometimes changed, either by a new diſeaſe taking place, or by the addition of new ſymptoms to the former ones. They divided the firſt of theſe changes into two kinds. In the firſt, they ſuppoſed the change to take place, not from any effort of nature, but merely from ſome alteration in the nature of the morbific matter. In the ſecond, they ſuppoſed a metaſtaſis, or ſudden determination of the matter of the diſeaſe, from one part of the ſyſtem to another. We know, that theſe phyſicians left Nature to herſelf, and yet, we find them complaining of the ſame vulgar prejudices, that are prevalent, even in theſe times. Hippocrates himſelf tells us, that ignorant people attribute a ſecondary diſeaſe to the phyſician, although it is the inevitable conſequence of the primary one. According to this venerable ancient, every diſeaſe, which is thus the conſequence of another, commonly proves fatal: and he gives his reaſons for this, by obſerving, that the body is already ſo much weakened, by the preceding diſorder, that Nature will be unable to ſupport the courſe of this ſecond diſeaſe. Aretæus tells us, that little diſorders give riſe to greater ones, and that theſe become dangerous, although the others were in no way ſo. Duretus obſerves, that the morbific matter of a primary diſeaſe, is much milder than that of the ſecond, which is occaſioned by a ſudden metaſtaſis of the morbific matter; and that the diſeaſe is much more ſupportable, whilſt the patient retains his ſtrength, than when this is exhauſted. Duretus obſerves likewiſe, that altho' every ſpecies of dropſy is dangerous, yet that it will be much more ſo, if it ſucceeds any other inveterate diſeaſe, and more eſpecially a Quartan. Huxham remarks, that they who have oedematous ſwelling of the legs, after having been a long time aſthmatic, are probably about to be relieved from their aſthma; but that, if the oedematous ſwelling diſappears, the aſthma will return again. I have ſeen this happen. There are ſimilar obſervations in Baglivi. Notwithſtanding all this, however, the cauſe of theſe ſubſequent diſeaſes, will always be aſcribed, by the vulgar, to the phyſician.

If a diſeaſe is ſuddenly ſucceeded by death, here again the phyſician is cenſured; and yet, events of this ſort are not unfrequent. They were very familiar to the ancients. We ſee ſome, who die apoplectic; others, in ſyncope; ſome, from a dilatation, or rupture of the heart or great veſſels. We ſometimes, and particularly in camps, meet with acute fevers, which prove fatal on the ſecond or third day. According to Boerhaave, a ſpaſmodic colic, accompanied with inflammation, has carried off the patient within an hour. I have ſeen children, and even adults, roll upon the ground, in the greateſt agony, from a worm colic, and die ſoon afterwards. The moſt innocent things, on ſuch occaſions, are conſidered as the cauſes of death, becauſe they happen to take place juſt at that period: and this is the reaſon, why people are ſo ready to condemn the moſt ingenious phyſician in theſe caſes. They never inquire, whether the nature of the diſeaſe might not occaſion death, as well as the phyſician's preſcription. I do not deny, but that, even a ſimple purgative medicine, may be fatal to a patient, if adminiſtered at an improper time. But I am ſpeaking here of experienced phyſicians, and not of ignorant pretenders.

All theſe obſervations lead to prove, that a phyſician who undertakes the treatment of a patient, ought to poſſeſs courage as well as capacity. He ought to feel himſelf ſuperior to the prejudices and illiberality, which are ſo common amongſt men, that we find them inceſſantly applauding, not the induſtry and talents, but the ſucceſs, of a phyſician. He ought to be aware too, that the vulgar are every day praiſing and rewarding empirics for cures, in which they had no ſhare; whilſt they reproach an ingenious phyſician with the death of a patient, whoſe days had, perhaps, been lengthened out by his ſuperiority of ſkill, and who died, at laſt, becauſe the diſeaſe was in its nature incurable. An ignorant practitioner would probably have ended the patient at once.

Men may be ſaid to judge of cauſes by their ſucceſsful termination, when they aim at praiſing one phyſician more than all others, and endeavour to prejudice one, who does not happen to pleaſe them, notwithſtanding his merit: and yet nothing is more common than this, amongſt people who ſee too little, to diſcover the true reaſons of the good or ill ſucceſs of a phyſician. Malice ſeems to be the uſual companion of Ignorance.

It is well known, that the ſelf-love of men is almoſt always the principle, on which they found their hatred or their eſteem. It is by this principle, they are led to reſpect or to deſpiſe us, and to judge of our talents and merit. To acquire their eſteem, we muſt think as they do, otherwiſe they immediately feel themſelves hurt. As the phyſician has ſo often to do with the vulgar, he will be more likely to diſpleaſe them, than to acquire their good opinion; becauſe they, who are his judges, do in no way reſemble him. The merit of a phyſician, is too often determined by a majority of voices.

The phyſician Trophilus was one day aſked, whom he conſidered as an accompliſhed phyſician? He, who knows how to foreſee the poſſible and the impoſſible, anſwered Trophilus. In the barbarous ages, ſuch a phyſician would have paſſed for a magician; in theſe times, he can expect only contempt. This is a learned man, cry the people, there is every thing to be feared from him. It will be to no purpoſe, that ſuch a phyſician proves, from the moſt palpable effects of nature, that he has ſeen things properly, and acted with judgement; as he is not one of the vulgar, he will be deſpiſed. The right of performing cures, would ſeem to belong only to the ignorant.

Harvey obſerves, that a compleat apoplexy is either immediate death, or certainly mortal; and, that an incompleat apoplexy is generally fatal; but that, in ſome caſes, it terminates in palſy; the effect of which, is always an infirm ſtate; and ſometimes, the patient dies ſuddenly, at a time, when he ſeems to be pretty well recovered. Stahl tells us, he had never had the good fortune to cure, either a real apoplexy, or a true hemiplegia; but, that he had ſeen a number of patients, in whom ignorant practitioners had ſuppoſed theſe diſeaſes, and who had gained infinite reputation by removing them.

Perſons, after a violent intoxication, have, ſometimes, had ſlight degrees of apoplexy, ſucceeded by a paralytic affection of one or other of the arms, which, in a few days, goes off of its own accord. Dr. Tiſſot has ſeen ſlight attacks of a ſolitary, frequent, and temporary palſy. I have ſeen, and cured, ſuch a kind of palſy, and even the palſy of a whole limb, only by rubbing it with ſome ſpirituous liquor. Such cures, in the hands of pretenders, would have been deemed miracles.

Sometimes, a patient has a fancy to try ſome particular remedy, and gets well; he immediately aſcribes his cure to this, and, from that moment, pretends to determine the cauſe of his complaint, by the effect of a remedy, of which he knows not even the nature.

It now and then happens, that a patient falls into the hands of an ingenious phyſician, who aſcertains the nature of the diſeaſe, points out its cauſes, and eſtabliſhes the curative indications: this deſerving man is, perhaps, diſmiſſed, and an ignorant practitioner called in, who, by chance, ſucceeds, in preſcribing a remedy ſuitable to the indications which the other had determined, and it is this ſecond who cures the diſeaſe; he alone can be ſuppoſed to have known the cauſes, becauſe he removed them. An ignorant phyſician will be always free from cenſure, if he adviſes a remedy, which has been propoſed by ſome perſon as ignorant as himſelf. If it does not ſucceed, it is the fault of the patient: the ignorant fellow, who propoſed the remedy, is pleaſed to ſee it authorized by the phyſician; and the phyſician, on his ſide, triumphs in ſpite of his ſtupidity, becauſe he is ſure not to meet with contradiction from people of this ſtamp.

A true phyſician, on the contrary, is ſure to read his condemnation in his preſcription, if theſe ignorant people diſapprove it. If he ſucceeds, they attribute all the effects of his medicines to nature; and if he fails, or has not all the ſucceſs he expected, he is ſaid to have known nothing of the diſeaſe. It is certain, that one unſucceſsful remedy given to a patient, without the advice and conſent of his ignorant friends, will do more harm to the reputation of a phyſician, than an hundred unfortunate cures will do, in which he ſhall have contradicted nobody, or in which he ſhall have preſcribed only ſuch medicines, as were agreeable to the vulgar.

It will appear from hence, how arbitrarily men judge of cauſes, and how extenſive is the influence of malice, prejudice, and paſſion. Shall it be ſaid, after all this, that the voice of the people is a legal ſuffrage? I have been convinced, by my own experience, of the falſity with which men judge of facts, when they know nothing of their cauſes. I was once accuſed of having killed a child, which had been killed by its mother three weeks before I opened it: it had been diſcovered only by the crows that were attracted by its putridity; it happened, that two or three drops of blood flowed out when I examined the body, and there were people ready to believe, and to ſay, that I had killed it. On another occaſion, I was accuſed of poiſoning a patient. The caſe was as follows. A man of ſome rank, was attacked with pleuriſy, which manifeſted itſelf by an acute pain at each reſpiration, cough, fever, and a conſiderable ſpitting of blood. I gave him a mixture, that I have a thouſand times employed, with the beſt ſucceſs, in the ſame diſeaſe, and which was compoſed of Nitre and Camphor, a little Cinnabar, Syrup and Water. The phial happened to break upon the ſtove on which it ſtood, and the medicine, as a proof of my iniquity, left behind it a brown ſpot, which, this reſpectable man and his wife ſhewed, during many years afterwards, to all their viſitors, and ſpoke of it, in their own way, in all companies. The cauſe of all this rancour aroſe, from my having refuſed to preſcribe the medicines propoſed by the wiſe; a lady, by the bye, who has taken it into her head to aſcertain the merit of all our phyſicians, although her ſyſtem of phyſic is confined to her cookery book.

I have been accuſed likewiſe of deſtroying a lady, of whoſe caſe I ſhall ſpeak hereafter; becauſe this lady appeared, after death, to one of her friends, with my medicines in her hands, and ſaid, that I had killed her.

It would be endleſs to enter into all the errors of ſuperſtition. Magicians, Sorcerers, and Apparitions, will always abound in countries, where they are authorized by Religion; or, at leaſt, where the people find an intereſt in believing them. Theſe errors, however, are not confined to any particular country. I have ſeen Proteſtants a thouſand times more ſuperſtitious, than the moſt zealous enthuſiaſts; they were conſtantly referring to prodigies, the cauſes which they could not underſtand. In general, wherever there is no philoſophy, whether it be in Switzerland, in Germany, in England, in France, in Spain, in Italy, or in China, there will be ſpectres, witches, and, in one word, ſuperſtition.

The very learned and ingenious profeſſor Meyer, of Halle, has attacked theſe prejudices, at their very ſource, in a little work, which is extremely intereſting and entertaining (*a*). Another writer has

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(*a*) The title of the work here alluded to is, "*The Operation of the Devil on the terreſtial Globe.*"

has written a book, in a very different ſtile, but very inſtructive, in its contents, entitled, *The philoſophy of the Diſtaff.* This work may be read to advantage, by thoſe, who have not Genius enough to comprehend the reflections of the celebrated profeſſor of Halle. He relates above ſix hundred examples of different ſuperſtitions, which are almoſt univerſally prevalent at this day (*b*).

All theſe idle notions ariſe, from an incapacity to examine the true cauſes of an effect, and thus to diſtinguiſh that, which is ſupernatural, from that which is not. And profeſſor Meyer does well to obſerve, that a deficiency of reaſon is the cauſe of every prodigy. That much pains and labour are required, to diſcover the true cauſes of theſe events; that many obſervations muſt be united, and many experiments made; and that, to all theſe, there muſt be added a degree of learning and penetration, with which few men are endued. Without all theſe, it is impoſſible to diſtinguiſh the affinity there is between an actual effect, and its ſuppoſed natural, or ſupernatural cauſe; or to know, whether we do

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(*b*) Our celebrated countryman, Mr. Reynolde Scot, of Scot's Hall, in Kent, ought not to be forgotten here. This ingenious man ventured to oppoſe the doctrine of Witchcraft, at a time, when it was ſo univerſally believed, that even biſhop Jewel, in a ſermon before queen Elizabeth, prayed God they might "never practice farther than upon the ſubject". And king James I., in his preface to his Demenologie, obſerves, that his book was written "chiefly againſt the damnable doctrine "of Wierns and Scot; the latter of whom is not aſhamed, in "public print, to deny, that there can be ſuch a thing as Witch-"craft, and ſo maintains the old error of the Sadducees, in denying of ſpirits."

aſcribe to abſurd cauſes, what is the effect of a very ſimple one, or what, on the other hand, is even impoſſible. A man muſt be well verſed, in the knowledge of natural things, before he will be able to determine what is, or is not, founded, in the eſſence of things themſelves, whether it be in particular, or in general.

There are really many effects, the cauſes of which are ſo hidden, that the moſt penetrating mind diſcovers nothing: and yet, the ignorant multitude, ſays Mr. Meyer, ſee theſe cauſes in charms, and other the moſt ridiculous things, although theſe cauſes are very often in the thing itſelf, ſuppoſing it to be true.

Every time the people obſerve a change, of which the cauſe is concealed from them, but which appears with ſomething elſe at the ſame time, they conſider this laſt phenomenon as the cauſe of the firſt. They do not ſeem to know, that two things may be combined together, either becauſe they depend on one and the ſame cauſe, or becauſe they always happen together.

Two things may exiſt together at the ſame ti[illegible] and be very intimately united, and yet the one may not depend on the other. Philoſophers agree, that the flux and reflux of the ſea, depend chiefly on the poſition, in which the moon finds itſelf with reſpect to our globe. And yet this motion of the waters does not render this impreſſion of the moon perceptible. There is no flux or reflux to be perceived in the Baltic ſea, nor from Hudſon's bay to the bay of

Campeachy, nor in the Caſpian ſea, and other places. The barometer undergoes no variation from this attractive power of the moon. The moon does not ſeem to have any influence on the winds. The periodical winds ſeem to depend on the ſun. Nor has the moon that influence on vegetable life, which has been aſcribed to it, by gardeners and country people. The obſervations, made by La Quintinie, Reaumeu, and Buffon, during a great number of years, prove, that it is impoſſible to perceive the leaſt influence of the moon on vegetables, and that phenomena are every day occurring, in the vegetable kingdom, in which the moon has no ſhare. The moon acts on the earth only by its light. Its luminous rays have been collected in the focus of the largeſt burning glaſs, without any heat being communicated to the thermometer.

Although it ſeems proved, that the moon has no ſenſible influence over the earth, yet there are many writers, who think they can aſcertain its influence over the human body. The Diſſertation, written by Mead, to prove this, is, in ſome reſpects, uſeful, although it is founded on a falſe principle. He pretends, that the moon's attractive power, being greater in the full, than in the new moon, our atmoſphere is then elevated, and that the air, immediately ſurrounding us, becoming lighter, our bodies are leſs compreſſed by it. Hence it happens, ſays he, that the fluids being determined in a greater quantity towards the ſurface, dilute, and ſometimes open, the veſſels. Mead fancied he was able to explain, by this hypotheſis, all the affections, which are regulated by the courſe of the moon;

and to this aerial phenomena he aſcribed the periodical diſcharge in women. But there is not a day paſſes, on which ſome woman has not her catamenia; whereas, if Mead's opinion was any thing more than hypothetical, every woman ought to menſtruate on the ſame day. On the ſame principles, he explains the returns of epilepſy, which often correſpond with the changes of the moon. But this is ſo dependent on the occaſional cauſes, in the generality of men, ſuch as the temperature of the air, errors and irregularities in diet, exerciſe, venery, and the paſſions in general, that the moon can have but very little ſhare in this matter.

Father Belgrade, an ingenious Jeſuit, has very judiciouſly obſerved, that as the moon can act on our globe only by its light, its influence ought to be proportioned to the luminous rays it reflects on us. It has been obſerved, ſays this Jeſuit, that the moon occaſions epileptic fits, both at the new and full moon; conſequently, it does this, at times when it tranſmits the moſt, and the leaſt rays of light to us. The influence of the moon cannot, therefore, be in the direct ratio of the light ſhe reflects upon us; and, of courſe, there can be no other affinity between the changes of the moon, and the returns of epilepſy, than what is purely accidental.

Notwithſtanding the incapacity and the ignorance of the vulgar, we find them conſtantly judging, by their experience, without ever perceiving the cauſes and effects, of which they pretend to determine. This ſort of experience only ſerves to add to the proofs of their ſtupidity. The leſs they ſee, the more juſt do they ſancy their reaſonings to be, and this is very natural. They therefore imagine, they have a right to oppoſe their experience to that of the moſt ſkilful phyſician.

I know a place, where the people have a cuſtom of cramming their children with pap, from the moment of their birth, beſides giving them milk from the breaſt, and which, of itſelf, would be ſufficient. Nothing is more common than convulſions amongſt the children there. I had occaſion one day to ſay, what I thought of this aliment. Inſtead of ſeeking for the cauſes of the frequent deaths which happened, in the regimen, and in the affections this occaſioned in the *primæ viæ*, the relations aſcribed theſe diſeaſes to the conſtitution of the mother or grandmother, or ſome other of the family. I relieved ſeveral of theſe children, to the ſeeming diſpleaſure of their parents, becauſe I did not treat them according to their mode of thinking. But medicines alone, not ſeeming to be ſufficient, I deſired them to change the regimen, and to give them no more pap. Upon which they all took the alarm at once, and began to cry out againſt me: "*Our children did very well before you came*
"*to live here. Nothing is ſo good as pap; we are*
"*convinced of it by experience, and we are ſure, that*
"*you know nothing of the matter.*"

I am aware that many children are fed with pap, and yet do well; but, at the ſame time, I am convinced, that it does infinite miſchief, and that many of the infants I treated, would have eſcaped, if their ſtomach and bowels had not been ſo loaded with this pap, as to bring on convulſions. The people, and they who think with them, imagine they have a right to plead their experience, when they have ſeen a ſingle caſe, which ſeems to prove the contrary of what has been ſaid. They may, indeed, have ſeen an effect, but they reaſon badly from it. A good woman argues in the following manner: "*My child cried; I offered him the breaſt, and he was quiet. Conſequently, it will be right to ſuckle all children that cry. I have tried this, and therefore know it to be true.*" It would be to no purpoſe, to ſay to this good woman, that the child cried, becauſe he felt a pain in his bowels, which was occaſioned by the milk, and which, ſuckling will, of courſe, increaſe. The moment a phyſician has ſaid this, all the women exclaim againſt him as an ignorant fellow, who does not know, that the breaſt is good for children who cry. Theſe good people don't conſider, that every day's melancholy experience proves, how much they are miſtaken.

They, who aim at proving the abilities of a phyſician by his ſucceſs, likewiſe imagine they do this from experience. They obſerve, that a patient gets well under the hands of an ignorant fellow; whilſt another, who is treated by an ingenious phyſician, dies. They are not at the pains to inquire, whether theſe two patients were ſick in the ſame degree, of the ſame diſeaſe, and with preciſely the ſame circumſtances. It is ſufficient, that the firſt of theſe patients recovered, for his phyſician to be conſidered as a man of abilities; and the death of the ſecond, ſtamps the ingenious practitioner as a man of no underſtanding. And for all this, they plead their experience, although the event of theſe caſes did in no way prove the ignorance or the abilities of the phyſicians. This reflection, however, is beyond the reach of the multitude.

Theſe erroneous deciſions ought not to diſconcert the phyſician. The only perſons, who can judge properly of his merit, will be men of learning and Genius, who are ſuperior to the prejudices of the vulgar. A phyſician, who proves, that he acts agreeably to the experience of all ages, that he reaſons from juſt principles, which are confirmed by the obſervations of the beſt writers, and that he has properly applied theſe to the preſent circumſtances, will do well to leave the people to judge of cauſes and effects, in their own way, whilſt he conſoles himſelf, with having done all that is right and judicious. There will always be calumniators, ſaid Democritus, becauſe there will always be perſons diſpoſed to liſten to them. Demoſthenes, on ſuch occaſions, conſtantly held his peace; becauſe, he who is overcome in theſe ſort of combats, is always ſuperior to his conqueror.

There are every day ideots, who recommend medicines to the ſick, on the ſtrength of experience. There are, even many perſons of diſtinction *(a)*, who

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(*a*) This kind of ill-placed charity, for it uſually proceeds from benevolent motives, is, perhaps, no where more frequent and who are thus dangerouſly officious. Every man is permitted to relieve his fellow creatures; but ſurely he ought not to venture to do it in this way, without knowing the cauſes of the diſeaſe. I have known ſeveral people of fortune, who put by a certain ſum, every year, for the purchaſe of medicines, which they diſtributed to the poor. Some of theſe poor people were relieved, and others were much hurt by them. Perſons, who are diſpoſed to do acts of benevolence, and to relieve the ſick, would do well to conſult ſome ingenious practitioner on critical occaſions: but they never think this neceſſary. It is ſufficient, if a remedy has ſucceeded in a few caſes. It may do good, and it can do no harm. This is their mode of reaſoning. They do not know, or recollect, that although, from a ſear of doing too much, they have given leſs than was neceſſary, yet there is as much danger in doing too little, as doing too much; becauſe, by omitting what ought to be done in a favorable moment, we ſuffer the diſorder to increaſe, and are no longer able to maſter it. A blind zealot is always

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and fatal, than in England. I know a clergyman's wife, who is ſo prejudiced in favour of a mixture, the principal ingredient of which ſeems to be Emetic Tartar, that ſhe diſtributes it on all occaſions. If any poor people are indiſpoſed, within her walks, ſhe goes herſelf, with her bottle in her pocket, and recommends it with ſo much goodneſs, that it is impoſſible to refuſe taking a cup of it. If they are at a greater diſtance, ſhe ſends it to them. I once had occaſion to ſee the fatal effects of this remedy, in a patient, whoſe death was, at any rate, conſiderably haſtened by it. There is hardly a village in the kingdom that would not furniſh ſimilar anecdotes.

a dangerous man. No perſon of good ſenſe and humanity, who knows the ſweets of life and health, and the value of our induſtrious poor to the ſtate, will ſurely interfere in ſo ſerious a matter, as the treatment of a diſeaſe, of which he knows not the cauſe, if he gives a ſingle moment to reflection. But it is leſs difficult, with the generality of men, to determine the cauſes of a diſeaſe, by the effects of a remedy, than it is to reaſon like philoſophers.

Notwithſtanding all the difficulties, which, we think, muſt naturally occur to every man, who conſiders a diſeaſe, we, every day, ſee men of the moſt confined underſtandings, deciding the moſt hidden things with the greateſt boldneſs. Blinded by prejudice and paſſion, men often fancy themſelves leſs biaſſed, in proportion as they are really influenced, by them. They confound Science with Experience, and Experience with Science, without poſſeſſing either the one or the other. The merit of a phyſician is miſunderſtood; the patient is hurried into the grave; and Ignorance, whatever may be the event, is triumphant. To judge from the conduct of this incorrigible vulgar, phyſicians would ſeem, to be the only perſons, who are ignorant of phyſic; and yet, ſo great is the inconſiſtency of the ignorant, that they are every day ſending for phyſicians.

I will ſuppoſe, what may, indeed, be true, that a man, of a narrow underſtanding, has learned, from ſome particular obſervations, that ſome one remedy or method has been uſed with ſucceſs. But ſurely, it does not follow, from this, that it will have the ſame ſucceſs in other caſes, which have only a precarious affinity with the former one; or which, if really of the ſame nature, differs from it in ſome particular circumſtances. I know, that Ariſtotle made, what he called ſimply, *Experience*, to conſiſt in the remembrance of particular caſes; but, at the ſame time, he conſidered, as pure machines, they, who ſimply adopt this, without joining to it the uſe of reaſoning.

The cauſes of diſeaſes will never be aſcertained, unleſs we join reaſoning to facts, and facts to reaſoning; becauſe, ſimple facts, without reaſoning, will afford us no idea of the nature of the phenomena, nor will reaſoning in any other way, than from facts, be applicable to any circumſtance that may preſent itſelf. Ariſtotle, therefore, did well to ſay, that even with a knowledge of general principles, we ſhall be liable to commit frequent errors in the healing art, unleſs we join, to this knowledge, the experience of particular caſes; becauſe, it is only to theſe, we ſhall be able to apply theſe principles. Ariſtotle adds, that he who poſſeſſes theſe principles, is the man of erudition; becauſe, it is he, who poſſeſſes Science, properly ſo called.

## SECTION II.

### *Of the manner of inveſtigating the cauſes of diſeaſes.*

" THE cauſes," ſays Fernelius, " are ſo intimately connected with diſeaſes, that it is " impoſſible for the latter to diſappear, ſo long as " the former ſubſiſt. They, who inſtead of acting " with the temerity of empirics, aim at reaſoning " on what they ſee, begin by inveſtigating the " cauſes which excite or foment the diſeaſe, that " they may be the more eaſily enabled to accompliſh the cure. Philoſophers have been particularly ſtudious to inquire after the cauſes; " becauſe nothing can be known with certainty, " unleſs we are informed of theſe. So long as a " cauſe continues its energy, ſo long will its effect " continue likewiſe. The power of the cauſes is " to be eſtimated by the ſtate of the *vis vitæ:* " becauſe the vital principle, being the faculty on " which all the others depend, the leſs affected " that is, the leſs powerful and conſiderable will " be the cauſes."

The inveſtigation of theſe cauſes is not performed without conſiderable difficulty. In general, we ſeldom can diſcover them in their effects, at the firſt glance. That which is known, does, indeed, lead us to the unknown; but the former may depend on ſo many different circumſtances, that it is only by the moſt ſcrupulous inquiry, we can be able to aſcertain a cauſe, by the determination of its effect. A diſorder, in the functions, leads us, at once, to ſuſpect theſe cauſes; but this irregularity may, perhaps, be aſcribed to ſeveral. On ſuch an occaſion, the mind ſees things with uncertainty. The way to diſcover the cauſe is, indeed, open to us, when we have well obſerved; but to know how to conduct ourſelves in this way, we muſt be aware of the varieties that are to be found in all theſe cauſes, It is only by being able to diſcriminate theſe, that we ſhall be able to combine the cauſes with their effects, without being deceived,

The mind conceives the idea of an effect, from the ſenſible change we perceive in the body. That which has occaſioned, or ſeems to have occaſioned, this change, gives us an idea of the cauſe. The general acception of the word cauſe, is the reaſon, by which we comprehend the exiſtence of a phenomenon; and by the cauſe of a diſeaſe, that which has excited it,

There is always a direct or indirect affinity between a cauſe and its effect. This connexion or affinity is direct, when an effect is immediately excited by its cauſe; when it depends on a firſt cauſe, but may be referred to one or more intermediate cauſes, it is ſaid to be indirect.

As a cauſe conſtantly indicates an effect, and an effect a cauſe, the firſt idea of cauſe is that of an efficient cauſe. This efficient cauſe, is either ſingle or multiplied, eſſential or contingent. An eſſential cauſe is that, which muſt neceſſarily have produced an effect. A contingent cauſe is that, which produces an effect only with a certain ſuppoſition. A common cauſe is that, which operates by the concurrence of one or more others. Properly ſpeaking, there are no contingent cauſes; becauſe theſe can only be the effect of other cauſes, either known or unknown, and, of courſe, eſſential.

Although an effect may ſeem to be purely accidental, inaſmuch, as that it does not happen often, ſtill it is not the leſs neceſſarily determined by its particular cauſe, although this cauſe may be unknown to us. It can be conſidered as accidental only, with reſpect to that, which commonly, or the moſt uſually, happens in ſuch circumſtances. It is in this ſenſe, we are to underſtand Cicero, when he ſays, ‘ *Adjuncta non ſemper eveniunt.*’ But this effect is not excluded by him, on this account, from what he calls *conſequentia*, that is, *Quæ rem neceſſariò conſequuntur*, or, the neceſſary effects of an antecedent cauſe.

Every thing that immediately precedes a thing, which cannot take place without it, muſt neceſſarily be connected with it. This is the reaſon, why a cauſe, conſtantly conveys the idea of a neceſſary affinity with its effect. We cannot be allowed to make any diſtinction between an occaſional and a contingent cauſe. The occaſional cauſe is neceſſarily connected with its effect. But in the operations of nature, there are no occaſional cauſes. Every thing, ſays Cicero, is uniform and conſtant.

The idea of a direct or indirect affinity, between a cauſe and its effect, leads us, at the ſame time, to diſtinguiſh between a proximate and a remote cauſe, A remote cauſe is that, which determines, as it were, the poſſibility of a thing. A proximate cauſe, is the cauſe, properly ſo called.

Every common cauſe is that, which contributes to the production of an effect. If it acts with the others, and at the ſame time, it is ſimultaneous. We are not to forget, in the conſideration of theſe ſimultaneous cauſes, that, ſeparately, and without the concurrence of the reſt, they would not be able to produce the effect we are obſerving, and, therefore, we are to conſider them collectively.

But phyſicians commonly allow to the word *cauſe*, a more general acceptation. They underſtand by it, whatever contributes to excite a diſeaſe, whether it be a real cauſe, or only part of a cauſe; or a particular ſtate of the body, without the concurrence of which, the diſeaſe could not take place; hence, the diſtinctions of cauſes, conſidered as relative to diſeaſes. The one ſort are, in general, thoſe, which have contributed to excite and render the diſeaſe poſſible; and theſe are called, Remote cauſes. The others, are thoſe, which immediately occaſion the diſeaſe; and are called, Proximate cauſes. The former, are the cauſes of a diſeaſe being poſſible; the latter, give it actual exiſtence.

A phyſician acquires a knowledge of the cauſes, by conſidering, what might be the ſtate of the patient before the attack, and what is his real ſituation,

tion, ſince the morbific cauſes have exerted themſelves upon him. This latter ſtate is indicated, by the diſorder of the pulſe, and reſpiration, and of all the other functions in general. The ſenſible changes, lead us to preſume the cauſes in general; our own, and the obſervations of others, inform us, how much each of the probable cauſes may have contributed to produce this alteration. We then aſk, whether any thing has occurred, at any time, ſimilar to what we are preſuming. If there has, we are enabled, perhaps, to trace out the cauſe. The moment we have diſtinguiſhed one or more cauſes, capable of producing the diſeaſe before us, we then conſider the cauſes themſelves, with reſpect to their energy; and from this, we are led to judge of all they have produced, and are likely to produce. If the diſeaſe correſponds with the effects, which we ſee may reſult from the action of theſe cauſes, we may be ſaid to know the diſeaſe. The phyſician ought to aim at diminiſhing, as much as poſſible, the number of effects he is required to inveſtigate, and he will do this, by ſimplifying and reducing ſeveral ſymptoms, to what is the moſt common to them. The more he advances in this plan, and the more he diſtinguiſhes that which is accidental, from what is conſtant and eſſential, the more will he approach to the cauſe he ſeeks after. The number of different diſeaſes would be conſiderably diminiſhed, if writers would confine their deſcription of effects, to thoſe which are eſſential and inſeparable from each diſeaſe. We ſoon acquire the knowledge of a diſeaſe, when we are previouſly aware of what we are to attend to, in any particular caſe.

It is not eaſy, or indeed always poſſible, to determine the difference, between that which is eſſential, and that which is not; becauſe, in ſome caſes, we muſt find out the cauſes of the non-eſſential ſymptoms, before we know that they are ſuch. Theſe cauſes are to be found, by inquiring, whether the ſymptom before us, is derived from the eſſence of the diſeaſe; or, from a cauſe, which is not inſeparable from the diſeaſe. We may aſcertain the former, perhaps, by conſidering all the powers of the diſeaſes; and the latter, by comparing together all the other circumſtances.

We may likewiſe reduce and ſimplify the cauſes to a certain degree; becauſe different diſeaſes may be the ſame in their nature, although they have different ſeats. Thus, an inflammation of the head, or lungs, or inteſtines, is, in reality, the ſame thing, although its effects are very different.

The effects of a ſimple cauſe are ſometimes different, and, of courſe, the effects of different and complicated cauſes, will be ſo likewiſe. There are many diſeaſes, which owe their ſource to one cauſe, and which are cured the moment that is removed. Van Rozen has proved, that the *Purpura Scorbutica* (*b*), deſcribed by Eugalen, but in a better manner by Hoffman, may be concealed, and aſſume the appearance of any other diſeaſe. He has proved, that cough, cardialgia, melancholy, gout, palſy, and even tetanos, may be derived from this hidden cauſe,

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(*b*) See Dr. Cullen's *Synopſis Noſolog. Meth.* pag. 203.

cauſe, which is eaſily removed by a gentle diaphoreſis. In ſuch a caſe, the cauſe is diſcovered only in the cure. Sometimes, the effects of different cauſes are ſimilar to each other. Women, who are ſubject to chloroſis, experience the ſame ſymptoms as thoſe, who are bit by the Tarantula (*c*), and are cured in the ſame manner.

The cauſes of diſeaſes are, in general, complex; that is, many determinate powers form ſo many parts of a cauſe, and, of courſe, a diſeaſe, which is the reſult of their combined power. Thus the remote cauſes concur together in forming the proximate cauſe. A ſimple effect may, likewiſe, be owing to ſeveral cauſes, ſo that we ſhall, with difficulty, fix on a general cauſe, when ſeveral may agree in producing the ſame effect. Thus, cardialgia, which is ſo common amongſt children, and which carries off a great number of them, conſiſts in convulſive motions, during which, the child becomes blue. This may be occaſioned by the meconium, by milk, by dentition, or other cauſes.

Madneſs may likewiſe originate from a variety of cauſes. In general, it is a very ſimple diſeaſe, becauſe it may be reduced to one ſingle idea, which predominates above all the reſt. In ſuch caſes, therefore, we muſt endeavour to diſcover every thing that is contrary to the order of nature. We muſt range amongſt the cauſes, thoſe phenomena,

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(*c*) The hiſtory of the Tarantula, and its effects, are now known to be fabulous.

which on other occaſions, we have obſerved, to make a dangerous impreſſion on the mind. In this way, we learn to diſtinguiſh, in a ſeparate manner, each ſolitary cauſe, which has united in co-operating the ſame effect.

Very compound effects, and which are derived from different cauſes, are diſcompoſed and analyſed, when we have aſcertained the connexion of theſe effects, with their cauſes, and the connexion that the cauſes may have on each other. We muſt trace to its ſource, each individual effect, which, of itſelf, cannot explain the phenomena of a compound effect; but we ought to have a previous and determinate knowledge of the power of each particular cauſe, we may ſuppoſe to be united in the compound cauſe; or, at leaſt, we muſt be careful not to aſcribe to cauſes, what is not indicated by the effects.

When a compound effect has indicated ſeveral cauſes, we ſhould inquire, whether theſe cauſes have exiſted together, or concurred, one after the other, to produce the effect. If they co-exiſt, we ſhould aim at determining what they may produce when reunited, by eſtimating the common effect from the particular powers of each cauſe. The produce of all theſe cauſes, which do not counteract, and which, of courſe, cannot deſtroy each other, is the compound effect, the cauſes of which are thus aſcertained. It is in this way, we are to proceed in the inveſtigation of all compound diſeaſes; whether two only may be united, as the lues and the gout; or three, as the lues, the gout, and ſcorbutic diatheſis. But if, in this inquiry, we perceive, that two things are reciprocally repugnant to each other, and which cannot have concurred together, we may conclude, that one of theſe is not the cauſe.

The analyſis of the cauſes will, therefore, be an operation of ſome length, at the bed-ſide of the patient, whether his diſorder be ſimple or compound. Every thing depends here on the art of queſtioning judiciouſly, and of this art every man is not poſſeſſed. I have often heard the moſt ridiculous queſtions put by old and uninformed practitioners, and have been hurt by the applauſe, with which they were received. Rouſſeau has very properly remarked, that we ought to be well acquainted with things, before we can be able to inform ourſelves of what we do not know. The Indians ſay, "The "learned man is inſtructed, and inquires; but the "ignorant man, knows not what he is to inquire "after."

An inquiſitive and ingenious phyſician, carefully examines all the circumſtances, which can lead to a knowledge of the true cauſe of a diſeaſe. He examines, not only the natural ſtate of the air, but likewiſe its accidental qualities; he aims at aſcertaining, how, and in what, this air, the preceding ſeaſons, the conſtitution of the preſent ſeaſon, the exerciſe, regimen, ſleep, excretions, or other external cauſes, can have altered the health of the patient. From theſe he proceeds to the ſick body itſelf, by examining the ſtate of its functions, and, eſpecially, of its ſecretions, and inquiring, what was the ſtate of theſe, previous to the attack ; that he may be the better able to eſtimate the changes they have undergone from the diſeaſe. The temperament of the patient will likewiſe claim his particular attention. A knowledge of this, will very often afford a greater reſource, in determining both the remote and proximate cauſes of a diſeaſe, than any other means. We eaſily judge of the ſtate of a patient, when we are previouſly aware of the diſeaſes, to which he has the greateſt prediſpoſition.

It has been remarked, however, that every diſeaſe is not the effect of all the cauſes, that are re-united in a particular ſick body. It has been proved, from calculation, that no diſeaſe would reſemble another, if each of theſe cauſes were to manifeſt itſelf in the patient, by an effect, peculiar to itſelf. The celebrated Sauvages has calculated, that, from ſeven cauſes only, there would reſult four thouſand ſix hundred and ninety-nine effects ; or, in other words, ſo many diſeaſes ſpecifically different from each other: on this principle, an hundred cauſes, would occaſion an infinite number of diſeaſes; and yet, the genera of diſeaſes ſeem now to be determined; and the ſpecies, which have been deſcribed, amount only to about three thouſand (*k*).

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(*d*) Noſological writers differ exceedingly from each other in their number of Genera. Vogel deſcribes 560 ; Linnæus 325 ; M. Sauvages 215 ; Dr. Macbride 179 ; and Dr. Cullen only 122.

The celebrated Stahl, after conſidering this matter, compoſed a Diſſertation on the rarity of diſeaſes. In this work, he proves, that the theory of the cauſes of diſeaſes is defective; that we miſtake variable phenomena for theſe cauſes; and that a man would not only be ill every day, but he would even have different diſeaſes every day, if the effects attributed to theſe cauſes were well founded. It would ſeem, as if Stahl, when he made theſe objections, did not recollect, that phyſicians, every day, admit the word cauſe, in a more extenſive ſenſe, and that they underſtand by it, every thing which contributes to procure a diſeaſe, without conſidering it as the true cauſe of the diſeaſe: ſo that no body pretends to ſpeak of cauſes without effects, nor effects without a cauſe; becauſe this, as Cicero obſerves, would be diſgraceful to philoſophy.

We ought to endeavour to diſcover all the cauſes of an effect, and we ſhall be always liable to err, if, inſtead of analyzing all the cauſes, we confine ourſelves wholly to one; and yet, the greater number of phyſicians, before Boerhaave, fell into this error. That great man proved, that many cauſes might unite to produce a ſingle effect. On the ſubject of digeſtion, Galen adapted a ſingle cauſe for all the others, by attributing this proceſs wholly to heat. He ſaid nothing of reſpiration, or the motion of the abdominal muſcles, or of the ſtomach, or of the maceration of the aliment in the Gaſtric juices. He ſeemed not to have been aware, indeed, that the digeſtive proceſs may be carried on independent of heat, as is the caſe with fiſh.

Morgagni obſerves, that the variety of cauſes, even in a ſingle diſeaſe, is much greater than men of ordinary capacity ſeem to ſuppoſe, and that the ſame diſeaſe may be ſimple, and yet very complex. Boerhaave has proved this, in the caſes of blindneſs, deafneſs, and difficulty of reſpiration. Senac has proved the ſame thing, with reſpect to the palpitation of the heart. The anxieties of hypochondriacal patients, ſometimes, follow a neglect of the duties of their ſtation. I have obſerved, that they, who are not exact in fulfilling their duty, fall from this cauſe alone, into the greateſt deſpair, after experiencing all the ſymptoms of hypochondriacal affection; but I obſerve, likewiſe, that they ſpeedily recover, when they are convinced, that this neglect, will in no way prejudice them. But if any one ſhould conclude from all this, that to avoid hypochondriacal affection, a man need only be exact in fulfilling his duty, he would derive a conſequence *a minori ad majus*, which would be erroneous; becauſe many perſons become hypochondriacal, merely from a ſcrupulous attachment to their duty.

After having aſcended, by analyſis, from effects to their cauſes, we muſt return, with the ſame philoſophical ſpirit, to examine them ſynthetically, by paſſing from the cauſes to the effects we have obſerved; or, we may proceed in both theſe ways, as we ſhall, indeed, be obliged to do, on many occaſions. By adopting the ſynthetical method, as I ſhall do, in the ſollowing chapters, on the Remote cauſes, we ſhall be able to determine the effects more immediately by the cauſes; and we ſhall propoſe the facts, as they proceed, the one from the other, in order the better to prove them.

When we know the nature of the effects which depend on a cauſe, theſe effects ſoon conduct us to that cauſe; and we ſhall the more readily diſcover what is, or is not, the cauſe of any particular change in another caſe; it is chiefly in this way, that we learn how to refute the popular errors, which a ſenſible phyſician can never adopt. Thus, the vulgar are of opinion, that nitre is a heating, and pepper a cooling medicine. It is in this way, likewiſe, that we can learn how to diſtinguiſh the effects of nature, from thoſe of the remedies we employ; becauſe, after having inveſtigated the cauſe analytically, we next proceed ſynthetically, and thus are enabled to aſcertain, what effects the cauſe is able to produce; and thus, we ſhall never attribute to a medicine, the effects which come immediately from nature. The moſt minute cauſes have a wonderful effect, when they act without intermiſſion; ſlight, but continued errors of diet. prove this. Their effects will, likewiſe, be different, according to the parts on which they act. Thus a ſlight prick in the nail, at the extremity of the finger, has ſometimes brought on the moſt horrid convulſions.

The violence of the cauſe ſhould likewiſe be inquired after, with all poſſible care. This will be eſtimated chiefly by the ſtate of the parts affected;

by the type of the diſeaſe; by the number, the greatneſs and violence of the ſymptoms; and by the inefficacy of the beſt choſen, and beſt applied remedies. All theſe circumſtances of the violence of a diſeaſe, will be found to have occurred in a ſpecies of colic, which I ſhall deſcribe hereafter, and which depended on the irritability and inflammation of the inteſtines.

Experience likewiſe proves to us, that both cauſes and effects change their determination; and that an event is ſometimes the cauſe, and ſometimes the effect, of the ſame change. Worms are, unleſs I am deceived, one of the cauſes; and ſometimes, likewiſe, the effect of epilepſy, in which the voracity, uſual to theſe patients, joined to the weakneſs of the natural functions, furniſhes enough for their ſupply. Anger is often a cauſe of epilepſy; but a diſpoſition to anger is, likewiſe, the uſual effect of this diſeaſe. Exceſs of venery is alſo a cauſe of epilepſy; and an exceſſive diſpoſition to venery, is almoſt always one of its effects. Grief, uneaſineſs, and anxiety, are, ſometimes, the cauſes of hypochondriacal affection and hyſterical paſſion; and, in general, they are the effects of theſe ſame diſeaſes. A change happening to the body, has very often occaſioned another on the ſoul, and this change on the ſoul, has effected another on the body.

We cannot well be deceived, as to the alternate viciſſitudes of cauſe and effect; becauſe, that which ſucceeds relative to time, to clear and ſufficient cauſes, is always an effect. I once ſaw a caſe of epilepſy, which was kept up many years by drunkenneſs and onaniſm, after having been, at firſt, brought on by the horrors of a monaſtic life. After a very conſiderable time, the patient voided, at firſt, common worms, then ſmall flat worms. Theſe appeared, after the epilepſy had been a long time deciſively eſtabliſhed from other cauſes; and they were, therefore, not the cauſe, but an effect of the diſeaſe. By a careful attention, in this manner, to time and circumſtances, we ſhall likewiſe learn to know the reciprocal changes of cauſes and effects.

Notwithſtanding this, we are not to conſider the effect as the cauſe, when ſuch a change cannot poſſibly take place. Melancholy patients commonly fall into this error, by conſidering the moral effects which follow their bodily ills, as the cauſes of their diſorder. Theſe perſons often fancy they are melancholy, only on account of ſuch a grievance, or misfortune; whereas, they are melancholy, becauſe they are really ſick. They aſcribe to moral cauſes, what is owing wholly to phyſical ones. They imagine, they have loſt their wealth, their friends, or their reputation; and yet, they recover all theſe the moment the remedies employed, have ſufficient efficacy to expel the flatus from their inteſtines.

Sometimes, the remains of a diſeaſe, are miſtaken for the cauſe of that which preceded it; or, the ſigns of a patient's amendment for its cauſe. Degner relates, that a pudding recovered a patient from dyſentery. A patient, ſometimes, has a long and ſmart attack of fever; at length, he feels a ſtrong inclination to eat two red herrings; they are given to him, and the ſever returns no more; but the great deſire to eat the pudding, or the herrings, in theſe caſes, was the ſigns, and not the cauſe, of a reſtored digeſtion. It is, from a miſtaken notion of the ſame kind, that pickled meat, and cheeſe, have been recommended as medicines of ſo much efficacy in dyſentery.

Boerhaave obſerves, that it is a dangerous error, to aſcribe all the diſeaſes of young women to a retention of the catamenia, which often do not appear, only becauſe the patients are ſick from other cauſes. He adds, that from an improper treatment, by thus confounding the effect with the cauſe, they very often become hectic. The ſuppreſſion of the menſes, is frequently an effect, and not a cauſe, of the febricula, deſcribed by Manningham.

It appears, from all that I have ſaid in this chapter, that the phyſician, who is poſſeſſed of Genius, is alone capable of tracing, and aſcertaining the cauſes of diſeaſes; that the vulgar are abſolutely incapable of determining theſe cauſes; and, that it is of no uſe to ſee, and to try every thing, if we are too little enlightened to ſee, too ignorant, to be able to conclude, from ſound reaſoning, and of courſe, unable to decide on any fact, which relates to the ſtate of the human body.

## CHAP. IV.

### *Of the Remote Cauſes of Diſeaſes.*

AFTER having pointed out a part of the errors, into which the phyſician is liable to fall, in inveſtigating the cauſes in general; and having traced out the way, which will lead him to a knowledge of thoſe cauſes, I will now endeavour to conſider, and deſcribe, the cauſes themſelves, their variety, and the influence they exert, naturally or accidentally, over the human body.

We have already obſerved, that the cauſe of diſeaſes, are diſtinguiſhed into Remote and Proximate. By Remote cauſes, we underſtand thoſe, which contribute more or leſs to excite a diſeaſe, but which produce it only when combined together. Others give the name of Remote cauſes, to thoſe, which ſuppoſe one or more intermediate cauſes, by the preſence of which, the diſeaſe manifeſts itſelf. It has been aſſerted, that theſe intermediate cauſes did not exiſt; and that, relative to the effect, we ought to conſider, as Remote cauſes, all thoſe which produce an effect, but which, however, is not yet the diſeaſe; becauſe, to conſtitute this, requires one or more other co-operating cauſes. The Remote cauſes contribute, therefore, to the production of a diſeaſe; but are not ſufficient to give it actual exiſtence.

There are many kinds of Remote cauſes. Thoſe, which have their ſeat in the body itſelf, are called, *Antecedent*, or *Pre-diſpoſing cauſes*; and thoſe, which are joined to theſe, are called, *Occaſional cauſes*. Neither of theſe, can of itſelf, produce a diſeaſe; becauſe, the Occaſional cauſe does no harm, if the patient has no Pre-diſpoſition to receive its impreſſions, and *vice verſa*.

The Antecedent or Pre-diſpoſing cauſes, are internal cauſes; whereas, the Occaſional cauſes are external, being foreign to the body, and exciting diſeaſe, only by acting externally on the ſubject. Theſe are the cleareſt of all the cauſes; we ſearch for them, commonly, in the ſix things, called *Non Naturals*, and in the paſſions of the mind. Pitcairne has, perhaps, done better, to confine them to the influence of other bodies on ours, and to the influence we have on ourſelves.

Thus, although the Remote cauſes of diſeaſes, are not the cauſes, properly ſo called, and ought not to be confounded with theſe, yet, have they not the leſs claim to the moſt careful inveſtigation; becauſe, by their means, we may hope to attain a knowledge of the Proximate cauſes; or, becauſe the concurrence of the Remote cauſes, taken together, forms the Proximate cauſe of the diſeaſe. Beſides, it is much eaſier to acquire a knowledge of the whole, from its parts, than it will be, by neglecting thoſe parts.

In conſidering the Remote cauſes of diſeaſes, we ought to inveſtigate the ſuppoſed influence of each upon the body, in its ſeparate ſtate; and then conſider, what may be their influence collectively. Sometimes, we ſhall find, that one cauſe acts upon another; at other times, a ſingle cauſe, will act upon the diſeaſe preſent; ſometimes, they will all act together, and very often, a compound effect will be derived, as we have ſeen, from a ſimple cauſe. To aſcertain the Remote cauſes, and their effects, will, therefore, require a philoſophical Genius, well verſed in the hiſtory of Nature; otherwiſe, we ſhall only fall from one error into another.

I will begin with the external cauſes. Theſe are to be met with in every thing that ſurrounds us, and determine, as it were, our exiſtence. Both health and diſeaſe flow from the ſame ſource; and the leaſt change in theſe external things, inſtead of life and health, may bring with it poiſon and death.

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## CHAP. V.

### *Of the air conſidered as a Remote cauſe of diſeaſes.*

THE air, we breathe, acts with a degree of preſſure, equal to thirty-two thouſand pounds weight on the body of a middle-ſized man. Our fluids counteract this preſſure by a proportionate reſiſtance, otherwiſe, we ſhould be unable to ſupport it.

But this ſame air, which ſurrounds us on every ſide, is not a pure æther, but the atmoſpheric air, impregnated with a variety of extraneous bodies, and which exhale from the earth. Theſe, and other circumſtances, are the cauſes of the variety of changes, the air may occaſionally bring about in the human body.

Let us firſt conſider the heat of the atmoſphere. It would be ſuperfluous to prove, that the hardeſt bodies, even iron, are expanded by heat; and, that by this, the coheſion and connexion of their parts, will conſequently be weakened. Heat may, thereſore, be expected to produce an analogous effect in the human ſolids, and excite an increaſed motion of the fluids, if it exceeds the natural heat. It is on this account, that the ſtrength and the appetite become more languid, that we bleed at the noſe, and that dropſical patients ſwell more, as the ſummer advances. Hence too, the violence of acute fevers.

The nervous ſyſtem is always the moſt affected by heat. This is the reaſon, why weak and delicate ſubjects ſuffer the moſt from it. In Switzerland, I have often ſeen hyſterical women affected with violent ſyncope, or convulſions, or obſtinate diarrhoea, and not recover again till the hot weather ceaſed. I have ſeen literary perſons have ſimilar diarrhoeas during the heat of ſummer, and not recover till the cold weather came on. Sir John Pringle has obſerved, that heat alone is ſeldom fatal to an army, unleſs the troops are exerciſed, or march in the heat of the day, or that the ſoldiers lie down to ſleep expoſed to the ſun. The heat of the ſun is very often fatal with us, as well as in other countries. I have ſeen labourers, returning from the plough, fall down, and die. Others, who recovered from the firſt attack, having expoſed themſelves anew, died within a few hours. I have ſeen ſimilar events in the electorate of Hanover. It is well known, that the heat of ſome particular days, may be the ſame in a variety of climates; even in Ruſſia, as great heats have been, now and then, felt, as in South America. I have, in Switzerland, ſeen violent phrenzy brought on by the exceſſive heat of the weather. In France, a child eight years old, was ſeen to loſe its memory, during the ſummer heats; to recover it again when the heat began to abate, and to loſe it again at the return of ſummer.

The inhabitants of the *Pays de Vaud*, are obliged to ſend their children, during the ſummer months, to the mountains; otherwiſe, they would be in danger of loſing their memory, or their ſenſes. It is, without doubt, on account of the great heat of this country, ſo extolled, in other reſpects, by Rouſſeau, that it contains ſo many ideots. The number of theſe, according to the obſervations of Baron Haller, is incredible in this flat country, and even in the mountains, in proportion to the number we meet with in other countries. Theſe people are born of healthy parents; their faces hardly reſemble the human figure; their mouth is extremely wide, and commonly gaping; the ſaliva is conſtantly flowing down to their chin; they have almoſt all of them bronchocela, a harſh and diſagreeable voice, and a mind, incapable of the leaſt reflexion. Some of theſe people, the number of whom is ſo conſiderable, paſs their days in bed, and ſeem averſe to any exerciſe, or even motion; they live to a great age, but ſeem not to have more, or even ſo much, underſtanding as brutes. They are ſo ſtupid and inſenſible, that Baron Haller ſaw one of them die, not long ago, merely becauſe he had ſo long abſtained from relieving nature, that the rectum had acquired a foot of diameter by a retention of the fœces.

The effects of continued heat are more general, and hurtful in the more ſouthern climates. In Italy, Spain and Portugal, people generally repoſe themſelves during almoſt the whole afternoon; becauſe, nobody has ſufficient ſtrength, during the heat of the day, to go about their affairs. At Delhi, they are obliged to ſleep at the door of their chamber, and without covering, during more than half the year. The merchants, and people of rank, ſleep in courts or gardens; the common people, in the ſtreet. The debility both of body and mind, occaſioned by exceſſive heat, is, in India, a very ſerious aud fatal diſeaſe to perſons of every rank. At Batavia, from nine in the morning till noon, people feel a painful laſſitude, the moment they go into the ſtreet. In the iſland of Ormus, the air is inflamed, as it were, during the day time, by the light reflected from the white mountains, ſo that, it is one of the hotteſt countries on the globe. The inhabitants are obliged to retire into the foreſts, and to plunge themſelves into water. The perſpiration is extremely great in thoſe countries. Bernier relates, that, in his voyage from Lahor to Cochemie, his body became truly ſieve-like, and that he had hardly ſwallowed a pint of water before it flowed out like dew at his fingers. It is well known, how much exceſſive ſweating weakens the body. The debility muſt therefore be extreme in very hot countries. The ſtomach is likewiſe very weak, and people in thoſe climates ſeldom have a freſh complexion, or the appearance of good health. The inhabitants of Banda, and the other oriental iſlands, have a ſickly and ſwarthy look.

The heat is ſo great, and ſo unhealthy in Jamaica, that there is no where to be ſeen the florid complexions we meet with in temperate climates. The inhabitants of this iſland are pale, ſickly, thin, and of a cadaverous hue. They appear rather like ſo many apparitions than living men. The negroes in America, ſweat to ſuch exceſs, that they are conſtantly languid and ſickly, and neither work nor ſpeak, but with extreme indolence. The Europeans preſeve their complexion, and their health, during three or four months after their arrival, and then they become like the reſt of the inhabitants; with this difference, however, that this change is much more ſenſible in young people (*a*). At Curaſſau, Europeans gradually loſe their freſh colour and vivacity: their natural heat even becomes three or four degrees leſs than what it was at their arrival.

Theſe are the reaſons, why convulſions are ſo common in hot countries, and why in the iſland

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(*a*) This ſeems to be taken from de Ulloa's voyage, who relates it of Carthagena, where we are told that, "the invariable "continuance of great heats, without any ſenſible difference "between night and day, occaſions ſuch profuſe preſpiration "in the body, that the wan and livid complexions of the inhabitants, would make a ſtranger ſuſpect, that they were juſt "recovering from ſome terrible diſtemper. Their actions are "conformable to their colour; in all their motions, there is "ſomething relax and ſluggiſh; it even affects their ſpeech, "which is ſoft and ſlow, and their words are generally broken. "But notwithſtanding all their appearances of ſickneſs and debility, they enjoy a good ſtate of health. Strangers from "Europe, retain their ſtrength and ruddy complexion, poſſibly "for three or four months; but afterwards both ſuffer ſuch "decays, from the exceſſive perſpiration, that theſe new comers, "are no longer to be diſtinguiſhed, by their countenances, from "the old inhabitants. Young perſons are generally the moſt "affected by the climate, which ſpares the more aged."

of Bourbon in Africa, and of Barbadoes in America, the whole body becomes convulſed after the leaſt wound. The oriental writers, the miſſionaries, and others, prove, that Melancholy is a diſeaſe which reigns principally in the Eaſt, but above all, in the parched climate of Egypt. Hippocrates obſerves, that even in his time, it was pretty prevalent amongſt the Greeks.

Acute diſeaſes, are very rapid in their progreſs in hot countries. Intermitting fevers, are either very rare, or altogether unknown in the Eaſt Indies. Continued fevers, on the other hand, are ſo violent, that the patients become at once delirious, and die in a few days, and ſometimes even in a few hours, according to Bontius. Titſingh ſays, that at Curaſſau, the thermometer is uſually from 80°. to 84°, and that Europeans on their arrival are commonly attacked with ardent fever.

Excluſive of this natural heat of the atmoſphere, the air may likewiſe be extraordinarily heated by particular cauſes at certain ſeaſons, and in certain places. We do, indeed, know many countries, in which the air becomes loaded with an inflammable exhalation, which takes fire on the leaſt approach of flame, and renders the greater part of theſe places uninhabitable. The winds are of uſe to modify this natural or accidental heat of the atmoſphere in particular countries; but their effect, ſometimes, is to produce a ſudden tranſition from heat to cold, and in this caſe they become noxious. We ſhall ſpeak more of this at the cloſe of this chapter.

Hippocrates noticed the effects which cold produces on bodies, and particularly on the human body to which he referred all his obſervations. We will leave it to natural philoſophers to inveſtigate the phyſical cauſes of cold; it will be ſufficient for us to notice ſome of its effects. We know, that it contracts even the hardeſt bodies, and renders them more compact; on fluid bodies it acts by diminiſhing their motion, and gradually rendering them ſolid. The human body, like all other bodies, is liable to the ſame laws. It has been obſerved, that cloaths, which are juſt fit in the ſummer months, become looſer in winter, becauſe the body is become more ſhrunk. Our ſolids are firmeſt in winter. We are then more active, ſays Hippocrates, our appetite increaſes, and the digeſtion goes on more rapidly. But on the other hand, the reſiſtance which the fluids oppoſe to the ſolids is ſo great, that the ſtrength of the latter, though much increaſed, cannot overcome it, if the cold is in a certain degree.

The French troops were in better health, and much more ſtrong and hardy in Canada, than they are commonly in France. They were more like Swedes than Frenchmen. Courage and ſtrength, ſeem to be peculiar to the Northern nations, ſo far, at leaſt, as they depend on ſtrength of conſtitution. Winter is, in general, a healthy ſeaſon, when we are well cloathed, and have good fires. Even putrid diſeaſes diminiſh their influence during that ſeaſon; but it likewiſe occaſions other conſiderable diſeaſes. Hippocrates noticed them formerly, and we continue to ſee them in theſe times, ſuch as he deſcribed them. They who uſe no exerciſe during the winter, feel many ill effects from cold. Delicate ſubjects are liable to very painful ſpaſmodid affections, after having been expoſed to violent cold. This may be remedied by warmth, and by ſuitable remedies. A delicate woman, ſixty-three years of age, in conſequence of a violent coldneſs of one of her arms, was affected with an almoſt univerſal cramp. It ſeemed to her, as if all her fleſh was tearing off, ſo great was her pain. She felt, at the ſame time, a moſt exquiſite pain in her ſtomach and bowels. Her pulſe, during the whole of this ſcene, was the ſloweſt I have ever felt. In three days ſhe recovered. When people uſe exerciſe, cold is commonly leſs noxious. The ſailors, who paſſed the winter in the ſtraits of Weiyatz, and who uſed exerciſe, preſerved themſelves amidſt the rigorous cold they underwent; excepting the crew of one ſhip, who periſhed becauſe they were indolent and inactive. People may live even at Spitzbergen, provided they uſe a great deal of exerciſe. But men cannot ſupport themſelves long in ſkaiting, unleſs they take a great deal of nouriſhment: becauſe in this violent exerciſe, the perſpiration is ſo much increaſed, as to be accompanied with conſiderable hunger, and an extraordinary laſſitude. It will eaſily be conceived how much the body ought to loſe, when moved on at the rate of fourteen miles an hour, which is not unuſual with ſkaiters. It is well known, how dangerous it is for a traveller to repoſe himſelf, when he feels intenſe cold, and an inclination to ſleep. If he ſleeps, he will probably never wake again (*a*).

The humidity of the air weakens a man ſuddenly. It relaxes the ſolids, and, of courſe, weakens the circulation, ſo that the ſecretions are carried on with difficulty. The inſenſible perſpiration becomes checked; the moiſture paſſes in through the abſorbing pores of the ſkin, and the patient feels a laſſitude and heavineſs, which deprive him of all his gaiety, and render the mind as oppreſſed as the body.

The air, in certain countries, is more humid than it ſeems to be. This humidity is ſo great in the Iſland of Java, and the neighbouring iſlands, and likewiſe in different parts of the continent of India, that iron, ſteel, and even ſilver, are ruſted, and injured by it, much more ſpeedily than in the moiſteſt ſeaſon in Europe. Cloaths become rotten, if kept long in cheſts in thoſe countries, without being

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(*a*) The reader will probably recollect a proof of this, in what happened to Dr. Solander on the Terra del Fuego. This ingenious gentleman having been accuſtomed to a cold climate, was aware of this effect, and cautioned his companions againſt it; and yet, he himſelf, was the firſt who was attacked with ſleepineſs, and his friend, Mr. Banks, was very much troubled to make him ſenſible of his danger. Cold, when applied in a ſlight degree, ſtimulates the body; but exceſſive cold acts as a ſedative, and deſtroys life.

often expoſed to the ſun. Iron ruſts on the Malabar coaſt ten times ſooner than it does in Europe (*b*).

The air is ſo humid in the Weſt Indies, that in the iſland of Bermudas it ruſts even the tiling of houſes, and ſtones, almoſt every ſort of metal, and even the largeſt cannon with incredible quickneſs. Neither hogs, nor beaſts of burthen ever drink in Jamaica, and yet, they are continually ſweating. The air is ſo moiſt, that the abſorbing pores of theſe animals imbibe a ſufficiency of water.

Damp ſituations are in every country unhealthy. Dr. Short has proved, from the number of deaths,

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(*b*) The effects here related, ought not to be referred to moiſture alone. Mr. George Forſter relates, that between the tropics, in Auguſt, books became covered with mould, and iron and ſteel began to ruſt; and he aſcribes this not to ſimple moiſture, but to the great heat, which had probably raiſed ſome ſaline particles. He obſerves, that the numerous animal parts, which putrify in the ocean, ſupply the volatile alkali, and that the great heat ſeems to volatiliſe the marine acid contained in the brine and common ſalt, and that this attacks the ſurface of iron and ſteel.—The learned Sir John Pringle, had long before this obſerved, that the ruſting of metals, is, perhaps, only an ambiguous ſign of moiſture in any place near the ſea, between the tropics. He had been informed by a gentleman, who made the experiment in Jamaica, that though iron ruſts very ſoon in that iſland, yet, that ſalt of tartar ſeemed to attract moiſture from the air, more ſlowly there than in Britain. The celebrated writer was, therefore, led to conclude, that the ſpeedy ruſting of metals, in hot climates, near the ocean, is owing to the great exhalation of the ſpirit of ſalt, which flies off from the ſea water, by means of the heat.—See *Obſ. on Diſ. of an army*.

that the marſhy countries, which are not expoſed to the winds, abſorb all their inhabitants. Thus, according to him, more people die in the fens of Cambridge, Ely, and Lincoln, than are born there (c).

Intermitting

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(c) The unhealthineſs of marſhy ſituations is not ſolely the effect of moiſture. Large inundations ſeldom ſenſibly affect the health of the inhabitants, till the waters are drained off, and ſome of the effluvia of the ſoil itſelf are raiſed into the atmoſphere.—Every day's obſervations prove this. The celebrated Dr. Heberden, in one of his ingenious queries, publiſhed in the tranſactions of the college, has ventured to inquire whether the ſuppoſed danger attending wet rooms, and damp cloaths, or beds, is founded upon experience, or prejudice which has been ſuffered to grow up, and get ſtrength merely for want of being examined. The learned writer obſerves, that the vapours ariſing from the bilge water of ſhips, have indeed a tendency to produce the ſcurvy. That the ſwampy plains alſo near the mouths of great rivers, which are often overflowed, and low ground, which cannot readily be drained, and thoſe tracts of lands, where the thickneſs and the extent of the woods keep the ground moiſt, and half putrid, for want of ventilation, are deſtructive to the neighbouring inhabitants, by occaſioning obſtinate intermittents in the colder climates, and peſtilential fevers in the hotter regions. But he concludes, that all this miſchief ariſes, not merely from moiſture, but from unventilated and putrid moiſture. Mere wetneſs, untainted with putridity, he believes to be inoffenſive, and he ſupports his opinion by a variety of ingenious facts. Dr. Franklin, in a letter to Dr. Percival, publiſhed, by the latter in the third volume of his Philoſ. & Med. Eſſays, ſeems to adopt the opinion of Dr. Heberden. "The gentry of England, ſays he, are remarkably afraid of moiſture and of air. But ſeamen, who live in perpetually moiſt air, are always healthy, if they have good proviſions. The inhabitants of Bermudas, St. Helen, and other iſlands ſituated far from continents, ſurrounded with rocks, againſt which the waves continually daſhing fill the air with ſpray and vapour, and

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Intermitting ſevers are very frequent in all marſhy ſituations. We likewiſe frequently ſee dyſenteries, and putrid fevers, if a hot ſummer is ſucceeded by a rainy autumn. I have ſeen the moſt violent diarrhoeas, with us, in the month of September, follow a ſuppreſſed perſpiration, whilſt the dyſentery was epidemic in the neighbouring countries. I was led to think, that both might, in ſome meaſure, depend on the ſame cauſes.

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“where no wind can ariſe, that does not paſs over much ſea, and of courſe bring much moiſture, are remarkably healthy. And, I have long thought, mere moiſt air has no ill effect on the conſtitution; though air impregnated with vapours from putrid marſhes is found pernicious, not from its moiſture, but putridity. It ſeems ſtrange, that a man, whoſe body is compoſed in great part of moiſt fluids, whoſe blood and juices are ſo watery, who can ſwallow quantities of water, and ſmall beer daily without inconvenience, ſhould fancy, that a little more or leſs moiſture in the air, ſhould be of ſuch importance. But we abound in abſurdity, and inconſiſtency.” Sir John Pringle obſerves, that, “Commodore Mitchell's ſquadron, which lay at anchor in the channel, between South Beveland, and the iſland of Walcheren, in both which places the diſtemper raged, was neither afflicted with the fever nor the flux, but enjoyed perfect health; a proof, that the moiſt and putrid air of the marſhes was diſſipated or corrected, before it could reach them; and that, a ſituation open to the wind, is one of the beſt preſervatives againſt the diſeaſes of a neighbouring low and marſhy country.” The late Dr. Rutty, in his chronological hiſtory of the weather, obſerves, that the *moiſt ſeaſons* in Great Britain and Ireland, are more free from epidemical diſeaſes than the dry ones; and that ſtorms, the uſual concomitants of rain, are more healthy than calm weather; probably, becauſe they diſſipate the vapours, which by ſtagnation might occaſion diſeaſes.

Dr. Grainger, a celebrated Engliſh poet, who attended the army with great reputation, as a phyſician, till the peace of Aix la Chapelle, obſerved, that in a very dangerous ſever, which reigned amongſt the troops in Auguſt, 1748, the number of ſick, was in proportion to the variations of the thermometer. Sir John Pringle relates, that after the battle of Dettingen, the dyſentery began to appear in the Engliſh army, before any fruit was in ſeaſon; and he aſcribes it to the troops lying wet after the battle. As ſoon as the army paſſed the Rhine, the dyſentery diminiſhed; but, few of the patients who were in the hoſpital eſcaped, becauſe they there caught the infectious hoſpital fever.

After the battle of Fontenoy, the troops were in good health, becauſe they were encamped on dry ground, and the night ſucceeding the battle was dry and warm. Even the autumn was healthy. At Mons, on the contrary, where the troops were in damp barracks, there were many dyſenteries, remitting, and even infectious fevers. There were many ſick at Louvain and Bruges, of thoſe who were in cold, damp barracks, whilſt they who were lodged in private houſes were healthy. There were indeed many ſick when the troops were at Breda, although there are no marſhes in that neighbourhood, but then the ſoil is exceedingly damp. The ſoil in that part of Brabant is a barren ſand, and would at firſt ſight ſeem to be dry and healthful, but the appearance is deceitful; for water is every where to be found, at the depth of two or three feet, and in proportion to its diſtance from the ſurface, the inhabitants are free from diſeaſes.

Barrere obſerves, that before the earth was cultivated, and the wood removed in Guinea, the climate was extremely wet and unhealthy, and that the young negroe children, commonly died with locked jaw ſoon after their birth. Adults were likewiſe attacked with the ſame complaints. The patients felt at the ſame time extreme hunger, and died convulſed.

If the air is at the ſame time cold and moiſt, the perſpiration is the more checked by it. The effects of ſuch an air ſoon influence the temperament. We become heavier and more inactive, in proportion as theſe two qualities predominate in the ſame climate. The air at Copenhagen is cold and foggy. This is the reaſon why travellers complain ſo much of the inclemency of the ſky there. It is very eaſy to diſtinguiſh a Dane from a Norwegian. The latter being accuſtomed to a cold and dry air, reſembles the Swede and Icelander, and is much more lively than the Dane. Diſorders of the throat and breaſt are, in general, the moſt violent and difficult of cure, when occaſioned by a cold moiſt air. The dyſentery uſually becomes epidemic in Switzerland, if cold weather ſucceeds ſuddenly to great heat, and thus checks the perſpiration.

The effects of the cold damp night air, in hot countries very properly claim a place here. The inhabitants of theſe climates are exceedingly affected by a degree of cold, which would appear ſlight, perhaps, to an European. Patients of every claſs, and eſpecially hypochondriacal ones, ſuffer much during the months of November and December, when this ſtate of the air commonly prevails. The opiſthotonos, that formidable cramp, which bends the body of the patient backwards, and which terminates by the moſt horrible convulſions, happens during the night time, in the iſland of Java, according to Bontius, to people who worne out by the heat of the day, throw their covering from the bed. Dr. Lionel Chalmers, who has been converſant with this diſorder in South Carolina, and who has deſcribed it with great exactitude, ſays, it occurs in all hot climates, and in every ſeaſon, but more eſpecially in ſummer, whenever a cold rain ſucceeds to great heat.

But the effects of heat and dampneſs in the air, are in general more fatal than thoſe of moiſt, cold, air. Such a ſtate of the air will naturally tend to relax and weaken the ſyſtem, and diſpoſe the fluids to putrid diatheſis. A hot and moiſt air is of a fatal tendency in every country *(d)*. Dr. Rogers obſerved that epidemical diſeaſes conſtantly prevailed at Cork, after great heat and dampneſs. Mezerai, ſpeaks of a terrible plague, which happened in the reign of Lewis XI. after a wet ſeaſon, and long

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*(d)* Sir John Pringle obſerves, that ſoldiers in a camp ſuffer much from heat, by being conſtantly expoſed to the ſun, either without any ſhade at all, or only covered by a thin tent; and where the air being ſo much confined, the heat is often more inſupportable than without in the ſun. And that this circumſtance, joined to the damps of a camp, ſeems to be the cauſe, that the ſummer and autumnal diſeaſes of an army, even in a northern latitude. reſemble ſo much the epidemics of ſouthern countries, eſpecially of thoſe with a moiſt air.

continued hot winds. This plague carried off forty thouſand at Paris, in the ſpace of two months. It is right to obſerve, however, that phyſicians formerly did not limit the word *plague* to the diſeaſe we mean by it now, but applied it to every epidemic, that made conſiderable havoc, and even to diſeaſes of the breaſt, and to ulcerated ſore throat.

The ſeaſons, in Java, are generally diſtinguiſhed into wet and dry. The dry ſeaſon is the winter, and the wet ſeaſon the ſummer. The ſummer is very unhealthy at Batavia, on account of the heat, and moiſture of the ſeaſon; although the humidity and the winds are the only things which render the heat of the climate ſupportable to a certain degree, and even the country inhabitable. The moſt common diſeaſes, ſuch as catarrhs, are on this account very frequent and tedious at Batavia. Other more violent diſeaſes are likewiſe very frequent, and extremely dangerous. The cholera morbus reigns with exceeding fury; carrying off the patient in the ſpace of four and twenty hours at the lateſt. The dyſentery is likewiſe a very frequent and formidable diſeaſe there. The dangerous effects of the hot and damp wind, which frequently prevails on the continent of Aſia, are too well known. It ſoon proves fatal to ſtrangers who are expoſed to it, and the inhabitants themſelves appear with a very ſickly countenance. Theſe people retire to the mountains, at certain ſeaſons, when this wind is moſt prevalent.

The air of the coaſt of Juda, and of the iſland of St. Thomas in Africa, which is ſituated immediately under the line, is likewiſe extremely unhealthy on the ſame account. It is well known, that the Portugueſe, in order to preſerve their Aſiatic and African ſettlements, were obliged to eſtabliſh ſtations at the diſtance of every thirty leagues; and at each of theſe the new ſettlers ſojourned during ſeveral months, that they might thus gradually accuſtom themſelves to this baneful climate. The ſeaſons, in Jamaica, reſemble in a great meaſure thoſe of Java; being divided into dry and moiſt: though there is rain now and then throughout the year, and in general the air is hot and damp. Acute fevers, and colics, are the moſt frequent diſorders in Jamaica. Theſe fevers carry off the patient within a few hours; and the colics are exceedingly painful: if the latter do not prove fatal to the patient, they at leaſt terminate in palſy. It has been aſſerted, that one ſeventh of the number of inhabitants die annually in Jamaica, and that without the freſh ſupply of new inhabitants it receives almoſt every day, it would ſoon become a deſert. The air is likewiſe extremely unhealthy, at Carthagena, and Porto Bello. Ulloa tells us, that the moſt fatal diſeaſes prevail at the latter of theſe places. That almoſt all the lying-in women die, and that neither cows nor mares breed there. The Galleons loſe every year a conſiderable number of their equipage. The garriſon is ſmall, and obliged to be frequently relieved; and few people venture to ſtay there, excepting during the fair, the charms of which are alone capable of reconciling them to the deadly air of Porto Bello. Almoſt all the women, who can afford it, go to lie-in at Panama. The yellow fever prevails with extreme fury in Martinico, and

St. Domingo, on account of the great heat and dampneſs of the air there. This diſorder uſually ſets in with a profuſe black vomiting, and at length degnerates to jaundice.

The dryneſs of the air reſtores to it the elaſticity it had loſt by its moiſture. Dry air is in general very healthful, becauſe it is very elaſtic. When not too cold it renders us lively and active. This is the reaſon, why it is ſo favorable to hypochondriacal patients. It ſeems to ſtrengthen the mind as well as the body. Such a ſtate of the air prevails during the winter months, at Montpellier, and with us during the fine days of September. A dry and cold air, ſeems to prediſpoſe the body to inflammation; pleuriſy is commonly a very frequent diſorder during ſuch a temperature of the air.

A dry, and, at the ſame time, not too hot an air, is extremely agreeable, and very ſeldom unhealthful. This kind of air at Montpellier is alone ſufficient to cure a number of conſumptive and vaporiſh Engliſhmen. An hot dry air melts down the fat, and renders men dry, thin, and as it were parched. This air prevails in the ſouthern parts of Spain, at Naples, in Sicily, Portugal, and particularly in Egypt. Bontius tells us, that the inhabitants of Batavia enjoy the beſt health when the air is dry and a little refreſhed by cool winds.

Increaſed weight of the air produces the ſame effects as increaſed elaſticity. The air is often ſuppoſed to be very heavy when it is damp and foggy, but it is certain that at ſuch a time the mercury in the barometer falls, and on the contrary aſcends, when the weather is fine. Boerhaave has proved that in the drieſt and cleareſt weather, the water is only carried higher up, and diſperſed in the higheſt regions of our atmoſphere. Therefore the more this moiſture is elevated above us, the drier will be the air about us, and the greater will be its elaſticity. On this principle, increaſed weight of the air, when it is dry and ſerene, and not too hot, will be found to increaſe our activity and chearfulneſs. In cold dry ſeaſons, the mind and the body are ſo much at eaſe, that a heavy Dutchman reſembles a lively Frenchman. Scheuchzer has formed a very ſingular notion reſpecting the weight of the air; he fancies he has found in it the cauſe of the noſtalgia, or diſorder which is ſo frequent among the Swiſs, when they are abſent from their own country. I ſhall ſpeak of this diſeaſe, when I come to treat of the paſſions. Many very powerful arguments have been oppoſed to the opinion of Scheuchzer.

The air is light at the top of high mountains, when the air above us is leſs weighty than that below, or when the air below us is loaded with vapors. Philoſophers are not agreed as to the way in which it acts on high mountains, where it ſeems to be much lighter than in the plains. Even the ancients were of opinion, that it was difficult to breathe on very high mountains; and we find that amongſt the Greeks, they who were deſirous of aſcending Olympus, applied ſponges, wet with water and vinegar, to their noſtrils and mouths, becauſe the air of that mountain affected their breathing. The moderns have ſaid the ſame thing of the Pike of Teneriffe, in Africa, and of many other mountains. The accounts of hemoptoes and other diſcharges of blood from perſons who have aſcended high mountains are very common; and yet, Meſſieurs Bouguer and la Condamine aſſure us, that they did not find their breathing in the leaſt affected during the ſix weeks they paſſed on Pichinca in America. Other writers, of credit, inform us, that their reſpiration was not at all affected, even on the Pike of Teneriffe, or mount Caucaſus, or mount Etna. Dr. Arbuthnot obſerves, that light air is inconvenient to the lungs only when we paſs ſuddenly into it, but that we might eaſily be reconciled to it by habit. Baron Haller is of opinion that the evils complained of by many people in aſcending with great trouble and difficulty very high mountains, are to be aſcribed wholly to the greater elaſticity of the air, which is very pure on their ſummits. It has been remarked, that they who have travelled at their eaſe, or on horſeback, have felt none of theſe inconveniences (*e*). Although the air of the higheſt mountains

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(*e*) Dr. Darwen an ingenious phyſician at Litchfield, has lately publiſhed ſome experiments, which prove, that no elaſtic air exiſts in the fluids of the human body, or in ſuch a ſtate, as to become elaſtic by any change, yet experienced in the weight of the incumbent atmoſphere; he therefore concludes that all theſe accounts we read of hemoptoes, &c. occurring to perſons who have aſcended high mountains, are to be aſcribed to violent exerciſe, or other accidental cauſes. The ingenious Dr. Percival allows the ſufficiency of Dr. Darwen's experiment to prove that no elaſtic air exiſts in the blood veſſels, but he denies the juſtneſs of his conclusions.—He thinks, that the relations of ſuch hæmorrhages are too well authenticated to admit mountains does not affect the reſpiration of healthy people, yet it becomes extremely dangerous to hectical ſubjects. Theſe patients require a very heavy air to diſtend their breaſt. This is the reaſon why perſons ſo affected, who have been uſed to elevated ſituations, feel themſelves ſo much relieved at Liſbon and Naples; and why the Swiſs, who become aſthmatic, breathe with more eaſe in Holland than at home (*f*).

The lightneſs of the air is much more ſenſible, when the quantity of watery vapors diminſhes its

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admit of any doubt or controverſy, and that they may be explained on rational, and philoſophical principles. He obſerves, and with great propriety, that the preſſure of the external air muſt be allowed to be a cauſe of reſiſtance to the propulſion of the blood through the vaſcular ſyſtem: that if this preſſure be diminiſhed, and the action of the heart remain the ſame, it is obvious, that the fluids will be propelled with greater force, and that the ſmall veſſels will be more diſtended by them: that we ſee a proof of this in the effect of a cupping glaſs: that upon the tops of high mountains the rarity of the air diminiſhes this reſiſtance univerſally, but, that thoſe veſſels of the body will be moſt diſtended by the vis a tergo, which belonging to the tendereſt organs are the leaſt capable of reſiſtance; and hence, thoſe of the lungs, noſtrils, eyes, &c. are moſt liable to be ruptured.—See *Philoſ. Tranſact. Vol.* 64. and *Percival's Eſſays*, Vol. III.

(*f*) Sir John Floyer, in his treatiſe on the aſthma, gives "inquiries ſent to an ingenious lady, troubled with an hyſte- "ric aſthma, and her anſwers to them;" in one of theſe anſwers, the patient writes, "I have found *London* air, and that of Hol- "land agree beſt with me; and by going into a ſharp air, I "have immediately fallen into ſhortneſs of breath, particularly, "upon my going from London to Epſom, but, upon my re- "turn to London next day, I was very well."

preſſure; a very mountainous country is, therefore, unhealthy on this account. It rains in the Andes, as in the Alps, almoſt the whole year. Halley was obliged to be frequently wiping the glaſſes of his inſtruments during the night, when he was conſidering the heavens in the iſland of St. Helena, which is covered with mountains. It is well known, that a diminution of the weight of the air weakens the ſolids of our bodies, and checks both the ſecretions and excretions.

Sudden or conſiderable changes in the ſtate of the air, produce very miſchiveous effects on our bodies. Boerhaave tells us, that the greateſt height of the barometer obſerved until his time was 30½, and the loweſt 27½. In Switzerland, the mercury falls much lower than this. The difference, between the two ſtationary points noted by Boerhaave, is almoſt equal to the tenth part of the greateſt weight of the air, and is therefore, not leſs than 3200 pounds. Heat, and cold, the vapors exhaled into the air, and the variety and ſtrength of the winds, are the principal cauſes of the changes in the air.

In Sweden the air is pure and ſerene. The four ſeaſons are more uniformly diſtinguiſhed than in any other country. In the ſtates of Algiers, the ſeaſons ſucceed each other, in the moſt imperceptible manner. The barometer varies at the moſt an inch and three tenths in the courſe of a year. The climate is ſo regular at Barbadoes, that the inhabitants experience no variation in the inſenſible perſpiration, as is the caſe in cold or wet countries. There is a uniformity of fine weather in Peru, and what is extremely ſingular, it never rains in that country. The ſky is indeed generally cloudy, but only juſt enough ſo to moderate the heat of the ſun, ſo that Peru is by no means ſo hot as the other tropical countries. This is the reaſon why, at Quito, the barometer does not vary more than an inch and a half in the courſe of the year. Addiſon did well to ſay, that nothing is more variable than the climate of England, except the temper of its inhabitants. There are, however, ſome exceptions to this in certain reſpects, and at certain times.

Conſiderable changes in the air are always extremely hurtful to every body, whether in good or ill health. The ſpring, which is ſo extolled by the poets, is a very unhealthy ſeaſon, on account of the frequent variations in the air during that period. It is commonly in this ſeaſon of the year, that phyſicians are the moſt employed, and with the worſt ſucceſs.

The cold nights, which in Lower Hungary ſucceed very hot days, are one of the principal cauſes of the dangerous fevers of thoſe countries. The patients for the moſt part die. All delicate people, all thoſe who are ſubject to nervous affections, and gouty people, or thoſe who have been wounded, but above all, aſthmatic patients, feel the leaſt variation in the ſtate of the air, and may truly be conſidered as ſo many living barometers. Inflammatory diſeaſes are never more fatal, than when great heat of the air is ſuddenly ſucceeded by cold.

Hitherto I have only ſpoken of the more ſenſible qualities of the air, and of the effects they produce on the human body. There are other accidental qualities which are not leſs dangerous, and even fatal in their effects. I allude chiefly to the corruption of ſtagnated air, and to the noxious vapors which may occaſionally mix with our air.

Air which has been long in ſtagnation, becomes a deadly element inſtead of ſupporting animal life. Even the air of a damp room, when it has been long ſhut becomes noxious, and even dangerous. I once experienced this in the neighbourhood of Berne. A parlour had been ſhut up all the winter, and on opening it, I was inſtantly ſenſible of the ill effects of the air it contained. Air that has been expoſed to animal reſpiration, loſes its elaſticity, and becomes incompatible with life: humidity and ſtagnation produce the ſame effects.

The fatal effects of confined air, in a ſmall and crouded room, are no where more fully exemplified than in the melancholy narrative of what happened to the Engliſh at Calcutta, and which I will briefly relate in this place.

It was in the month of June, 1756, that the viceroy of Bengal, laid ſiege to Fort William, the Engliſh factory at Calcutta. Mr. Holwell, aſſiſted by the factors and the garriſon, defended this poſt with extreme bravery, but was at length obliged to ſurrender. There were at this time remaining in the Fort, an hundred and forty-five men and one woman.

The whole of this unfortunate company, many of whom were wounded, and ſeveral very dangerouſly, were ſhut up the ſame night in a ſmall priſon only eighteen feet ſquare. This priſon, which is now better known in England, by the name of the black hole, was incloſed by ſtrong walls, and had only two ſmall windows at one end, ſecured by iron grates. In this confined ſituation, which allowed only a ſpace of about eighteen ſquare inches to each individual, the heat and the want of freſh air ſoon excited the moſt horrible effects. The priſoners, in a ſtate of deſpair, began by attempting to force open the door, but in this they were unſucceſsful. Mr. Holwell, who was placed near one of the windows, was more at his eaſe than the reſt, and was conſequently more cool and tranquil: he recommended it to his companions to be quiet and orderly, and not to exhauſt their ſtrength by uſeleſs efforts. This advice produced ſome little calm, interrupted however, by the groans of the wounded and the dying. The heat increaſed every moment. Holwell recommended it to them to ſtrip off their cloaths, as a means of acquiring more ſpace. This was accordingly done, but with no great relief. They attempted to improve this by fanning the air with their hats, but even this was too painful a taſk for men who were worn out, by the fatigue of the ſiege, and the heat of this dungeon. Another of the company, was for their kneeling down, that they might have more air. They all readily agreed to do this, and to riſe together in order to avoid confuſion. This was done ſeveral times; but every time the ſignal was given to riſe, the number of thoſe who had ſtrength enough to obey it, diminiſhed.

ed. There were conſtantly ſome remaining on the floor, who were unable to get up, and theſe were trodden to death by the ſurvivors. All this happened during the firſt hour of their impriſonment.

At nine o'clock in the evening, they all began to complain of exceſſive thirſt, and to renew their efforts to open the priſon door, and to tempt the centinels to fire upon them. Some of thoſe who were fartheſt from the window, became at once furiouſly delirious. The cry for water was unanimous. The guards brought water, and Holwell, and two of his wounded friends received it at the window in their hats, and were going to paſs it on to the reſt; but ſo eager and tumultuous were the efforts of the croud to get at this water, that Holwell's two friends were ſuffocated, the water was ſpilt, and Holwell ſaw himſelf ſurrounded with dead bodies, who had been either cruſhed to death, or died for want of freſh air.

Hitherto Holwell, the commander, and benefactor of theſe unfortunate people, had been treated with ſome degree of reſpect. But now all diſtinction began to be forgotten. The whole company eagerly threw themſelves towards the windows, and ſeizing the iron bars, ſome of them got even upon his ſhoulders. He was ſo borne down by this enormous weight, as to be deprived of all power of motion. He implored the pity of thoſe who were upon his head and his ſhoulders, and requeſted them to let him go and die at the bottom of the priſon. This requeſt was readily complied with, every one was deſirous of ſucceeding to his place, and without much difficulty he reached the farther end of the dungeon. The third part of theſe unhappy people were already dead, and they who were ſtill alive preſſed ſo eagerly towards the windows, that Holwell found himſelf ſomewhat freer in his new ſtation. But the air was ſo corrupted, that his breathing ſoon became extremely difficult and painful. Unable therefore, to ſupport this, he attempted once more to make his way to the windows; and leaning on a heap of dead bodies, he now reſolved to wait patiently for death. In this ſituation he remained about ten minutes, and then he experienced ſuch à pain of the breaſt, and ſo violent a palpitation of the heart, that he was obliged to make one more attempt towards getting a leſs fatal air. There were five rows of his companions between himſelf and the window; his deſpair carried him through four of theſe. The palpitation of his heart now began to abate, but he felt inexpreſſible thirſt, and cried out for water. This water ſeemed to increaſe inſtead of alleviating his thirſt. He therefore reſolved to drink no more, and choſe rather to ſuck the moiſture from his ſhirt, which ſeemed to afford him ſome relief. A young man, quite naked, who ſtood beſide him, eagerly ſeized the ſleeve of his ſhirt, and for ſome moments deprived him of this ſalutary refreſhment. It was not yet midnight. The little number of thoſe who were left, were tranſported to the greateſt exceſs of rage and deſpair. They all called aloud for air, becauſe the water that had been brought to them afforded them no relief. Soon after this, the noiſe ſuddenly ceaſed. The greater part of thoſe who were living, laid themſelves down, deprived of all their ſtrength, and peaceably breathed their laſt. Others aimed at getting into Holwell's ſituation: a Dutchman mounted on one of his ſhoulders, and a black ſoldier on the other. Holwell remained in this ſituation till two in the morning, when he gave up his place to a marine officer, who was ſoon forced out of it by the Dutchman. The officer retired with Holwell to the other corner of the priſon, and a few moments afterwards died. Holwell himſelf was ſoon deprived of ſenſe, and from that time till ſun riſe, we have no account of what paſſed.

One of thoſe who remained alive, at five in the morning, drew forth Holwell from the heap of dead, and found in him, ſome ſigns of life; about that time the Viceroy inquired whether Holwell was ſtill alive. He was told, that if the door was immediately opened, it would, perhaps, be poſſible to recover him, and orders were accordingly given for this purpoſe. But the door of the priſon opened inwards, and they who were within it, and living, were deprived of all their ſtrength, ſo that more than twenty minutes elapſed, before the dead bodies were removed, which prevented the door from being opened.

At a quarter after ſix o'clock, there came out of this melancholy dungeon three and twenty perſons, the remains of the hundred and forty-ſix who had entered into it the evening before. Holwell had a violent degree of fever, and was unable to ſupport himſelf, and yet, in this ſtate was he carried before the Viceroy, and by his orders tranſported in irons to Maxadavad the capital of Bengal. His fever was ſucceeded by a great number of boils on the ſurface of his body, which came to a ſpeedy ſuppuration, and he recovered. The viceroy ſoon reſtored him and his friends to their liberty, and they eaſily went by water to the Dutch factory at Corcemabad, and from thence got a paſſage to England.

Confined and corrupted air produces the ſame effects in every country. Stowe relates that in 1577, at the aſſizes at Oxford, "there aroſe amidſt the "people ſuch a damp, that almoſt all were ſmo-"thered. Very few eſcaped that were not taken. "There died in Oxon, three hundred perſons; and "ſickened there, but died in other places, two hun-"dred and odd." A ſimilar event happened more recently at Taunton: and ſo lately as the year 1750, at London (*a*). All theſe unhappy effects were occaſioned by one and the ſame cauſe, the poiſonous quality of corrupted air. The ſame effects take place in hoſpitals, and ſhips, and wherever men are crouded together in ſmall and unventilated apartments. The jail fever, which is ſo frequent in the Engliſh priſons, owes its ſource to the ſame cauſes. The priſoners in that country are ſeldom fed with bad meat or other unwholeſome food; they have good water, and in ſufficient quantity; they are well cloathed, and ſecured from the inclemency of

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(*a*) See Sir John Pringle on the diſeaſes of the army, 8vo. edition, page 329, & ſeq.

the weather (*b*). But the healthy priſoners are in the ſame apartments with the ſick; and it is to the un-

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(*b*) It is indeed true, that the uncleanlineſs of our priſons, and their not been properly ventilated, are the great ſource of the jail fever; but Dr. Z. ſeems to ſay more than we merit, when he adds, that our priſoners are well cloathed, and well fed, and ſecured from the inclemency of the weather. The obſervations of that humane and worthy writer, Mr. Howard, prove how many improvements we have yet to make in theſe matters. The jail fever ſeldom occurs in the priſons of other countries, where the priſoners are kept clean and ſeparate. But of how much uſe an antiſeptic diet is in the prevention of this diſeaſe appears from an obſervation communicated to Sir John Pringle, by the late Dr. Mounſey, who reſided long in Ruſſia, where he had been archiater under two ſucceſſive ſovereigns. It ſeems that *quas* is the common drink both of the fleets and armies in Ruſſia. This liquor is ſmall, briſk and acidulous, and is prepared by kneading ground malt, and rye meal into ſmall loaves; and theſe when baked, are occaſionally infuſed in warm water, which ſo ſoon ferments, that in twenty-four hours their beverage is compleated. Dr. Mounſey happening to be at Moſcow when he peruſed the *Obſervations on the Jail Fever*, was induced to viſit the priſons, but to his ſurpriſe, after viſiting them all, and finding them full of malefactors, yet he could diſcover no fever amongſt them, nor learn that any peculiar diſtemper had ever been known there. He obſerved, that ſome of the places of confinement had a yard, into which the priſoners were allowed to come for the air; but that there were others without this advantage, yet not ſickly; ſo that he could aſſign no other reaſon for the healthful condition of theſe men than the kind of diet they uſed, which was the ſame with that of the common people of the country, who not being able to purchaſe fleſh meat, live moſtly on rye bread (the moſt acidulous of any) and drink *quas*.—See Sir John Pringle's Diſcourſe on the means of preſerving the health of mariners.

cleanlineſs of priſons, and to their being ill aired, and filled with animal ſteams from foul or diſeaſed bodies, that Sir John Pringle very properly aſcribes this fever. The hoſpital fever differs in no reſpect from the jail fever. The celebrated writer we laſt quoted has ſeen an inſtance of its beginning in a ward, when there was no other cauſe, but one of the men having a mortified limb. Barrere obſerved, in a military hoſpital, that all the abſceſſes had a tendency to gangrene the moment they were opened. The corruption of the air was the cauſe of this. The ſame thing did not happen when they were removed to other ſituations where the air was pure. It is on this account, that compound fractures and other wounds, are commonly ſo fatal in the Hotel Dieu, at Paris: notwithſtanding the number of people who attend, and aſſiſt the patients, almoſt all thoſe who are trepanned there die. It is true, indeed, that fires are kept up in the wards, with a view to purify the air, but inſtead of doing this, it would ſeem to haſten its corruption. It is well known that the plague is the moſt fatal, when the heat is the greateſt (*c*).

Mercurialis

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(*c*) Fires in cloſe rooms will be exceedingly hurtful, both by increaſing the heat, and by conſuming the air fit for reſpiration. In more than one ſpacious hoſpital on the continent, I have ſeen Braziers placed in the wards, with a view to correct the foulneſs of the air, but the effects of theſe, for very obvious reaſons, were bad. Moderate chimney fires in very large apartments, to which the air has free acceſs through the doors or windows, may be occaſionally uſeful, becauſe by the rarefaction they produce, there will be a conſtant ſucceſſion of freſh air.

Mercurialis relates, that the workmen, whoſe buſineſs required them to be near fires were firſt attacked with the plague which appeared at Venice. Hodges ſays, that the great fires lighted in London, during the time of the plague, and which were kept burning during three days, were extremely fatal to the inhabitants, four thouſand of whom died in one night, whereas on other days, the number of deaths ſeldom exceeded four hundred. Mead obſerves, that nearly the ſame thing was experienced at Marſeilles.

The inconvenience I remarked, with reſpect to the Hotel Dieu, at Paris, ariſes chiefly from the air not being ſufficiently renewed there. This might eaſily be done by means of Dr. Hales's contrivance. Sir John Pringle aſſures us, that it is impoſſible to ſucceed in any cure in hoſpital practice, unleſs the wards are well ventilated. This great phyſician had occaſion to obſerve, that even the confined air of a tent, was ſome times ſufficient to occaſion a putrid fever. He has likewiſe noted the bad effects of air ariſing from the privies of a camp, and rotten ſtraw, and, therefore, in order to preſerve a purity of air in the dyſenteric ſeaſon, he

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air. Sir John Pringle ſpeaking of army hoſpitals, ſays, "It "is very common to look out for cloſe and warm houſes, and "therefore to prefer a peaſant's houſe to his barn; but experience has convinced us that air, more than warmth, is required;" and in another place, he obſerves, that care ſhould be taken to provide "large and airy wards, remembering that "warmth is not wanting in ſummer, and that in winter it is "chiefly to be procured by fires."

adviſes ſome ſlight penalty to be inflicted upon every man, who ſhall eaſe himſelf any where about the camp, but in the privies. He likewiſe thinks it may be proper to order the pits to be made either in the front or the rear, as the reigning wind of the ſeaſon may beſt carry off their effluvia from the camp.

The fatal effects of confined air are likewiſe every day experienced on ſhip board, by ſeamen in long voyages. It is diſgraceful to the Engliſh that the uſeful inventions of their ingenious countryman Dr. Hales, ſhould be ſo much neglected in their fleets (*d*). It ſeems ſtrange too, that in their ſhips they have

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(*d*) The learned Sir John Pringle, ſpeaking of the method taken by captain Cook, for preſerving the health of his ſhip's crew, during his late voyage round the world, expreſſes himſelf in the following manner:

" Among the ſeveral means of ſweetening or renewing " the air, we ſhould expect to hear of Dr. Hales's ventilator. I " muſt confeſs it was my expectation; and therefore, perſuaded " as I was of the excellence of the invention, it was not " without much regret that I ſaw ſo good an opportunity loſt " of giving the ſame favourable impreſſion of it to the public, " If a degree of ſucceſs, exceeding our moſt ſanguine hopes, is " not a ſufficient plea for juſtifying the omiſſion of a meaſure, " deemed to be one of the moſt eſſential, for attaining the deſired " end, I would plead in favour of our worthy brother, that " by a humiliating fatality, ſo often accompanying the moſt " uſeful diſcoveries, the credit of this ventilator is yet far from " being firmly eſtabliſhed in the navy. What wonder then " if captain Cook, being ſo much otherwiſe taken up, ſhould " not have had time to examine it, and therefore avoided the " incumbering of his ſhip with an apparatus he had poſſibly " never have no particular place for the ſick, who are not ſeparated from the healthy ſeamen, till their number becomes conſiderable, and then in fleets they are removed into an hoſpital ſhip. Hence it is that the Engliſh ſurgeons conſider the ſea ſcurvy rather as an accidental than an original diſeaſe, for it is always ſpread by contagion, and more particularly when the diſorder has made a conſiderable progreſs.

Raynold obſerves, that for want of ſeparating patients in ſuch caſes, the greater part of a ſhip's crew, who ſleep with theſe in a confined place that is ſhut up at night, become affected in the like manner, whilſt thoſe who are removed farther off, and whoſe hammocks are ſuſpended in more airy ſituations, are preſerved from the diſeaſe in the hotteſt climates. The ſame writer remarks likewiſe, that the officers of ſhips continue free from the complaint, even when all the other perſons on board are highly

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" never ſeen uſed, and of which he had at beſt received but " a doubtful character? Nor was he altogether unprovided with " a machine for ventilation. He had the *wind ſails*, and he at " times found them moſt ſerviceable, and particularly between " the tropics. They have the merit of taking up little room, " they require no labour in working, and the contrivance is " ſo ſimple, that they can fail in no hands; but their powers " are ſmall, in compariſon with thoſe of the ventilator, they " cannot be put up in hard gales of wind, and they are of " no efficacy in dead calms, when a refreſhment of the air is " moſt wanted? Should there be any objections to their employing both?—*See his diſcourſe on the means of preſerving the health of Mariners.*

diſeaſed, and this becauſe they ſleep and live at a diſtance from the ſick (*e*).

The mildeſt and moſt diſtinct ſort of ſmall pox, is ſometimes rendered extremely contagious by confining the patient in a heated chamber, and may then be communicated even by the cloaths. It is likewiſe the corrupted air of cloſe rooms, which occaſions that extreme weakneſs of which patients complain, even at the beginning of petechial fevers: this ſymptom is indeed, commonly aſcribed to the malignity of the diſeaſe, whereas its true cauſe ought to be looked for in the corrupted air of the ſick chamber, in the weight of the bed cloaths, and very often in the great fire that is unneceſſarily kept up.

The dyſentery becomes ſo contagious by the extreme putridity of the foeces, that the moſt healthy ſubjects, and even animals, become affected by it. We have an account of a dyſentery which was brought

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(*e*) The officers remain the longeſt unaffected on ſuch occaſions, not becauſe they ſleep and live at a greater diſtance from the ſick, but becauſe they live better than the reſt of the crew, and have better apartments, are better cloathed, and have more freſh air, &c. Nor does it appear, that the ſea ſcurvy is contagious, ſo as to be tranſmitted from one perſon to another, like the ſmall-pox. Dr Lind, indeed, obſerves, that in the year 1760, an unuſual epidemic and real ſcurvy, prevailed over the county of Southampton, which extended itſelf to the ſhips at Spithead, and to ſuch as were hovering on the coaſts. Nor were families living at their eaſe in the country exempted from a ſlight attack, nay, ſome were affected with it in a high degree. This is a curious fact, but it only proves that a certain morbific ſtate of the atmoſphere may be the occaſional cauſe of ſcurvy.

from Amſterdam to Nimeguen, and from thence ſpread through fifty Dutch towns, and carried off a great number of people. The dyſentery prevailed with ſuch malignity about fourteen years ago, with us, that in a little diſtrict of the canton of Berne, thirteen thouſand perſons died. Its greateſt violence ſeems to have been exerted in the neighbourhood of Berne. An eccleſiaſtic who reſides within a league of that city, has related to me ſome of the melancholy ſcenes he was an eye witneſs to at that time, in the village of Muri. He has very often, in one little cloſe chamber of a peaſant's hut, ſeen ſeveral dead bodies lying on a table, ; and four or five perſons, men, women and children, in their beds, attacked with dyſentery ; and with their pots by their ſide to relieve themſelves. This ſurely was ſufficient to give the higheſt degree of virulence to a diſeaſe, which is of itſelf, contagious. The ſeparation of the ſick, together with a free circulation of freſh air, ſeem to be the beſt preſervatives even againſt the plague.

All theſe fatal and melancholy effects of confined air, are not difficult to be underſtood. Sir John Pringle obſerves, that putrefaction is much more rapid in confined, than in open air. The putrid miaſmata are the moſt volatile : they are eaſily removed from the body, and thus are loſt in the air, and carried off by the wind ; but in a cloſe chamber they form, as it were, a putrid atmoſphere around the patient. It is well known, that the human body imbibes not only the moiſture of the air, but the great number of other vapours which are exhaled into it. Keil has proved, that a young man weakened from want of nouriſhment, but in other reſpects healthy, added eighteen ounces to his weight, in the ſpace of one night, and this by the abſorption through his pores. Another perſon has been ſeen to gain forty pounds weight in the ſame manner, in the ſpace of a day. M. de Haen, is of opinion, that dropſical patients abſorb more than an hundred pounds weight every day, from the moiſture of the air. It is ſuppoſed, that in general, the body abſorbs more than a pound every day by the pores. From all this it will be eaſy to conceive how much the patients, and thoſe who attend them, have to fear from (*f*) a putrid air. In fine, the air becomes corrupted by vapours of various kinds, ſo as to become extremely noxious, altho' not confined. The limits of this work will not allow me to examine, all the particular effects of vapors and exhalations, much leſs to deſcribe all their different combined powers. I ſhall therefore confine myſelf to ſome general obſervations, and will begin with the effluvia ariſing from putrid animal ſubſtances. Theſe infect the air differently. The city of Cork is noted for the great number of cattle killed there every year, for the ſhipping, between the months of Auguſt and January, and which is ſaid to amount to more than

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(*f*) The great purpoſe of air in animal life, conſiſts in its uſe in reſpiration, and therefore, its noxious effects are to be ſought for in this way, rather than in its abſorption by the pores. We now know that air, which has been once breathed, like the air in which flame has been extinguiſhed, becomes incompatible with animal life, and the firſt effects of mephitic and other air that extinguiſhes life, are therefore to be looked for in the organs of reſpiration.

an hundred thouſand head. There is an uncommon number of ſlaughter houſes in the ſuburbs, and the offals are left to corrupt in the ſtreets; whenever the rain falls in any conſiderable quantity, this putrid matter is carried along the kennels, into the river, and thus the air becomes filled with putrid miaſmata. Dr. Rogers, an ingenious phyſician, at Cork, obſerves, that in 1718, 1719, 1720, and 1721, the greater number of thoſe who lived near the ſlaughter houſes died. The violence of the diſeaſes which prevail there, and which are chiefly of the putrid kind, is conſtantly found to increaſe during the ſlaughtering ſeaſon. *(a)*

In Æthiopia, there are ſometimes ſuch prodigious ſwarms of locuſt, as to cauſe a famine after devouring the fruits of the earth, and unleſs they are carried off by the winds into the ſea, they die and rot; and thus in this exceedingly hot climate excite peſtilence. Dr. Mead has proved, that the plague takes its riſe in Africa, and he aſcribes it to the putrid miaſmata, with which the air of that country is conſtantly impregnated. Grand Cairo is conſidered as the ſpot from whence the plague is tranſmitted to Europe, Aſia, and other countries. The canals of this great city are filled with all kinds of filth and carrion, and when the waters of the Nile

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*(a)* Dr. Rogers joins other concurrent cauſes, ſuch as moiſture of the air, the want of good water, and the great quantity of fleſh meat eaten by the loweſt claſs of people, during the victualling ſeaſon, without bread or fermented liquors.—See his *Eſſay on epidemic diſeaſes.*

begin to be dried up, an inſufferably offenſive ſtench is exhaled into the Air. Hence it is, that the plague every year preys upon the wretched inhabitants, and is only ſtopt when the Nile overflows it banks again, and when the cold winds, which ſet in about the ſame time, purify the air.

All the exhalations from ſtagnant waters, are extremely pernicious on the ſame account. The myriads of inſects which die and putrify in them, become ſo many ſources of putrid miaſmata. Marſhy countries, without exception, abound with plants, that from their pungency and acrimony are naturally diſpoſed to putrefaction. To this cauſe have been attributed the diarrhoeas and even dyſenteries, which the water of the Seine excites at Paris: but it would ſeem as if theſe effects ought rather to be attributed to the quantity of filth and putrefactive matter, which flows into the river from the ſtreets, and likewiſe from the hoſpitals and ſlaughter houſes, which are in the very heart of the city. It is obſerved, however, that they who are accuſtomed to this water, feel no inconvenience from it, unleſs there are combined with it other accidental cauſes. Water in general is ſo ſuſceptible of putrefaction, that in long voyages, when it becomes corrupted in the caſks, it is found to yield an inflammable air.

The exhalations from marſhes, do not ſeem to be ſo noxious in cold as in hot countries. Nevertheleſs, malignant fevers occur even in Finland; and every year in Sweden, there are catarrhal fevers, and ſmall-pox, and meaſles, that are extremely fatal. Cold countries are in general very marſhy, on acount of the ſnow and the ice, with which they bound in winter, and which afford great matter for exhalation, during the ſummer months; but on the whole, there is a much greater tendency to putrefaction in ſouthern, than in northern countries.

The exhalations from marſhy and ſwampy grounds produce in Germany, tertians; in Hungary, petechial fevers; in Italy, the hemitritæa; in Egypt and Æthiopia, peſtilential fevers. The ſcum of ſtagnant waters is, in Barbadoes, a very active poiſon to birds, and even cattle.

I include, among dangerous ſtagnant waters, the moats of fortified places, in which the water has no motion; meadows, which are occaſionally overflowed, and in ſhort all moiſt ground. I myſelf experienced the ill effects of theſe exhalations when at Gottingen. The Leine, which is as inconſiderable, and almoſt as celebrated as the Illyſſus, frequently overflows its banks at Gottingen, and renders a ſmall part of the town marſhy. The moats round the town have likewiſe much ſtagnant water in them. I lodged at Baron Haller's, whoſe houſe is very near the marſhy ſituation I juſt now mentioned, and both myſelf, and the reſt of his family, were attacked with tertians. People in the upper parts of the town were wholly exempt from theſe fevers, whilſt with us, and in the neighbouring houſes, they continued to appear till winter came on.

Tertians are very difficult of cure, and very often incurable, or fatal in Holland and Dutch Brabant.

Almoſt all the low countries are marſhy towards the ſea, and there is a great ſcarcity of good water. It was not without ſome degree of horror that I paſſed through theſe countries, after the ſevere tertian I had felt in Germany. Sir John Pringle, who has given us a moſt accurate account of theſe effluvia, obſerves, that both fevers and fluxes in thoſe countries are often accompanied with worms; which are not to be conſidered as the cauſe of either, but as a ſign of the bad ſtate of the bowels, and the corruption of the aliment, owing to the heat, the moiſture, and the putrid ſtate of the air. An ingenious phyſician at Mulhauſen, relates, that an inundation, followed by a corruption of the waters ſtagnating in the moats at Neuf-Briſſac, was ſo fatal in its effects, that hardly a twentieth part of the inhabitants were exempt from the fevers which appeared at that time, ſometimes as intermittents, and ſometimes as remittent or continued fevers, and then again as intermittents.

Intermitting fevers are very frequent in Switzerland, in the neighbourhood of rivers and lakes, and even in the more mountainous ſituations. Sometimes they aſſume a high degree of malignity. In 1717, there prevailed at Stanz, in the canton of Underwald, a tertian fever, of ſo malignant a nature, that the patients were commonly carried off by the ſecond paroxyſm, with an excruciating head ach, and extreme oppreſſion of the breaſt. The ſource of this fever was traced to an extenſive marſh in the neighbourhood of the town. Intermitting fevers ſoon begin to aſſume the type of putrid fevers in the hotter parts of Switzerland; but in thoſe ſituations, where the banks of rivers and lakes are more elevated, tertians are leſs frequent.

The Adige, in Tyrol, overflows its banks every year, and leaves a conſiderable quantity of water in the neighbouring country. Some few weeks after this, the waters become corrupted to ſuch a degree, and ſo infect the air, that the greateſt part of the inhabitants quit their habitations in the month of May, and retreat to the mountains, where they continue till the month of September. All thoſe who are unable to do this, have, as we are told by Otter, a pale and ſickly countenance. Theſe people come down from the mountains only to gather in their harveſt, and commonly return again with tertians.

The Teiſſe often overflows the low grounds in Hungary, and thus occaſions thoſe dangerous fevers, but above all the dyſentery, which carry off, half the Auſtrian troops. Thierry obſerves, that the numerous colonies which paſs from Suabia into Hungary, for the moſt part die.

The exhalations from the marſhes in the neighbourhood of Rome, occaſion, during the hot ſeaſon, the hemitriteæ, which are ſo fatal there. The mouth of the Tyber is ſo choaked up, that it diſcharges its waters with difficulty, and hence there are many dangerous inundations. Targioni laments the ſolitary and deſolate aſpect of the beautiful plains around the mouth of the Cecina; it abounds with pools of ſtagnant water, that are occaſioned by the river's not being able to empty itſelf. He thinks it would be poſſible to remedy this inconvenience by cleanſing the mouth of the river, and carrying off the water from the ponds, by means of mills and ſluices. It is lamentable, ſays he, that ſo fine a country ſhould be inhabited only by a ſmall number of peaſants, going and coming, and who are paid a great price for their labour, but who according to an old proverb, enrich themſelves in a year, in order to die in ſix months. It is indeed true, that theſe poor people labour continually in a damp unhealthy air; at night they retire to ſome of the villages that are ſituate on the ridge of hills, where they drink bad water, and at length die of fevers, or ſcurvy or dropſy. Targioni himſelf nearly experienced the fatal effects of the bad air in the neighbourhood of Campiſaſſo. He began to feel a laſſitude, and a difficulty of reſpiration; alarmed by theſe ſymptoms, he withdrew immediately to the mountains, where the air was more pure, and there he very ſoon recovered.

It is obſerved at Venice, that they who live on the borders of the canals, are very ſubject to obſtinate jaundice, and the ſame thing is ſaid to occur on the ſhores of the Caſpian. But it is in Egypt, more than in all other countries, as we have already remarked, that theſe effluvia are fatal to life and health.

The reality of the effects we have deſcribed, cannot be conteſted, if we conſider the means by which we ſtop their progreſs or prevent them from taking place. Empedocles, a diſciple of Pythagoras, delivered the Salentines from the dangerous exhalations, with which they were incommoded, by conducting two neighbouring rivers through their marſhes. By theſe means the ſtagnant waters were carried off; the air was no longer infected; and the diſeaſes which had flowed from this ſource, immediately ceaſed. In ancient Rome, the evils which have ſince deprived it of all its former ſplendor, were obviated by magnificent aqueducts. The places in which ſea fights were repreſented, were ſupplied by ſubterraneous canals, through which all the water was let off the ſame night. It has been conjectured that the patriotiſm of Marcus Curtius, is handed down to us in a figurative way, and that he probably filled up at his own coſt, ſome ſtagnant pools, which affected the health of his fellow citizens.

The celebrated Lanciſi, phyſician to Pope Clement XI. by whom he was held in the higheſt eſteem, has rendered his name immortal by the uſeful plans he executed in this way. He undertook to drain off the ſtagnant water in the eccleſiaſtical ſtate, and by theſe means checked at once an epidemical fever, in the neighbourhood of Peſaro, Ferentino, Bagnarea, and Orvieto. The following ſeaſon none of the complaints were experienced, which before this, had conſtantly prevailed every year. He likewiſe cauſed the mouth of the Tyber to be cleanſed by mills, and opened drains through all the ſwampy ground, through which the ſtagnant water paſſed off. He gave directions for cleanſing with hand mills, all the cellars which had been filled with water during the inundations ; and the pools which from their ſituation would not allow of drainage, he filled up with rubbiſh. By theſe uſeful works he had a better claim to the epithet of, Deliverer of his Country, than thoſe Perſian tyrants who aſſumed it without deſerving it.

All Holland is interſected by canals, and in many of them the water is ſtagnant, tho' many methods have been adopted of late years to prevent this, and the evil, is indeed, conſiderably diminiſhed. Lanciſi ſpeaks of a pool of ſtagnant water in the neighbourhood of Stutgard, which every year occaſioned the moſt obſtinate intermittents ; this was dried up and the fevers diſappeared. The climate of Temeſwar in Hungary, is no longer ſo unhealthy, ſince a part of the marſhes has been drained.

It is well known how difficult it is to remove the humidity which remains in apartments after inundations. Thierry obſerved at Vienna in 1750, very ſenſible marks of the inundation that happened in 1744, in that quarter of the city, called, Leopold's-ſtadt. Every thing was mouldy in the houſes ; the walls were extremely damp ; and the furniture was ſoon ſpoiled and rotten. He obſerved too, that the people had a more pale and ſickly look here than in the other parts of the city.

I had an opportunity, not long ago, of ſeeing ſome very good directions given at Zurich, after an inundation. The river Sihl overflowed its banks, and the inundation ſpread over one of the beſt parts of the town. The magiſtrates of this happy republic, enjoined all the inhabitants of that quarter to remove the floors of their rooms, and then after taking away the damp earth, to put dry ſand in its ſtead. Theſe precautions had the deſired effect.

Exhalations from large cities are generally of a mixed nature. I will confine myſelf to ſome of their principal effects. The air of London has the reputation of being unhealthy, and this chiefly on account of the vapor of ſea coal, which is the common fuel there. It excites in ſtrangers a conſiderable heat in the ſtomach, and ſometimes a ſpitting of blood, and even nervous fevers, which terminate in palſy (*a*). The uncleanlineſs which is ſo particularly obſervable in all the towns in the ſouth of France, contributes, in a great meaſure, to the unhealthineſs of thoſe places. Every ſort of filth is thrown at night into the ſtreets, and it will eaſily be conceived how noxious the putrefaction of all theſe muſt be to the health of the inhabitants. Water which is ſuffered to ſtagnate in the ditches of fortified towns, and which is not continually expoſed to the free action of the air, exhales an offenſive effluvia which affects my lungs like the vapor of aquafortis, and gives me as much difficulty of reſpiration as if I was aſthmatic. This odor is ſo powerful, that it attaches itſelf to the cloaths, fixes itſelf in the noſtrils, deſtroys ſound, and ſometimes even takes fire or extinguiſhes flame.

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(*a*) This opinion, which is ſo generally received amongſt foreigners, appears to be altogether imaginary.

Subterraneous paſſages in which the foeces of the body are collected to be waſhed and carried away by ſtreams of running water, are therefore objects of importance to the general healthineſs of every place; theſe matters are extremely well regulated at Berne, and yet we ſee a butchery and burial place in the very center of this city, which is in other reſpects ſo clean and elegant.

The want of the neceſſary canals to carry off the filth, is one of the principal reaſons of the unhealthineſs of the air at Rome and Alexandria. Rome had formerly its common ſewers, but thoſe ſubterraneous canals were obſtructed by the fire of Rome, which ſerved to divert Nero. Since that time they have gradually gone to decay. The water does indeed enter into them, but it is only to ſtagnate and putrify; and ſo it does at Alexandria. This water ſoon becomes covered with a greeniſh and extremely offenſive film; and the vapor it exhales, extinguiſhes flame. It is to this cauſe we may aſcribe the hemetriteæ. Burial places and interments in churches, are likewiſe extremely prejudicial to health. The moſt fatal epidemics, and even ſudden deaths have ariſen from theſe cauſes.

The cultivation and effluvia of plants, may, in certain circumſtances be very unwholeſome. The cultivation of rice is particularly ſo, becauſe the land in which it is ſown, is required to be kept under water during ſeveral weeks, and thence ariſe vapors which may affect the towns in the neighbourhood. It is on this account, that in Italy, the growth of rice is forbidden within half a league from a town. In the neighbourhood of Jortona and Novare, where much rice is cultivated, the inhabitants have, in general, a cadaverous look. On the Malabar coaſt, rice is almoſt the only object of cultivation. It is ſown in the month of June, in a wet ſoil, which ſoon becomes a true ſwamp, from the water that is let in upon it, and when the rice is about four inches high, it is tranſplanted into freſh ground, which is conſtantly watered. The reader will eaſily underſtand that ſuch methods as theſe, in a hot climate, muſt neceſſarily be fatal. It is from ſimilar data, that we are to explain the fatality of the climate of America, to the firſt colonies from Spain. The ſoil was dry and uncultivated before their arrival, but the moment they began to till and water the ground for their ſugar plantations, the moſt ſickly effluvia were exhaled from it, and the Spaniards ſickened and died.

The vapor that ariſes from flax or hemp that is ſteeped in water, is truly peſtilential, and deſtructive even to fiſhes. In Germany, people ſeem to concern themſelves but very little about the danger ariſing from it; whereas, in Italy, it is permitted to be done only at the diſtance of ſome leagues from a town. The effluvia from a little heap of flax, has been known to occaſion a malignant fever, which proved fatal to the family in which it firſt began, and afterwards ſpread its contagion through a whole country. Lanciſi obſerves that dangerous fevers are often prevalent at Conſtantinople, which owe their ſource to the hemp brought from Cairo,

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and which is put wet into the public granaries, and ſuffered to ferment during the ſummer. It is ſold, and the ſeeds of theſe diſeaſes are thus ſpread amongſt the people.

All the plants which have been conſidered as of an alkaline nature, ſuch as cabbages, turnips, radiſhes, garlick, &c. produce, when they putriſy, effects analogous to thoſe of putrid animal ſubſtances. The Jews at Frankfort on the Mayne may be ſmelt at a great diſtance on account of their immoderate uſe of garlic ; and what a horrible ſtench ariſes in the quarter they inhabit ! Surely, it would be better policy to permit theſe people, who groan beneath oppreſſion, the liberty of chooſing their habitation, or of ſeparating themſelves from each other, on account of the extreme filthineſs of their populace.

Dr. Rogers relates that a very malignant fever having appeared at Wadham college in Oxford, and carried off a conſiderable number of people, the phyſicians could aſcribe it to no other cauſe, than to the putrefaction of a conſiderable heap of cabbages, which had been thrown from the neighbouring gardens, on a ſpot of ground contiguous to the college The noxious vapors which exhaled from theſe, infected a neighbouring building, but had not activity enough to extend farther.

Woods moderate the heat of the towns that are near them, and may likewiſe ſerve to turn aſide from them the noxious effluvia which are brought by the winds, becauſe thoſe vapors ſeldom riſe high enough from the earth to paſs in the current of air over the trees. Notwithſtanding all this, however, countries that abound with foreſts, are in general unhealthy, not only becauſe they obſtruct the free ventilation of the ſoil, but from the occaſional bad qualities even of the trees themſelves. Linnæus tells us, that the ſhade of the filberd tree is ſometimes obſerved to excite a ſlight fever. The inhabitants of Gothland, have given to the willow, for the ſame reaſon, the epithet of the wicked tree; hence too, amongſt the Swedes, the name of holy trees is given to thoſe, under which men are not permitted to ſleep. All the Europeans, who firſt paſſed over to Surinam, died there, and the cauſe of their death was unknown, till at length this fatality was diſcovered to be owing to the exhalations from a venomous tree, to which Linnæus has given the name of *Hippomanes.* (*b*)

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(*b*) Of all poiſonous trees, the *Manzanillo,* which is peculiar to South America, is, perhaps, the moſt active. The fruit of this tree in ſhape and colour and flavour exactly reſembles an apple; but there lurks under this beautiful appearance, ſo ſubtile a poiſon, that its effects are preceived even before it is taſted. The juice of the Manzanillo is no leſs poiſonous than the fruit; for if any of it happens to fall on any part of the fleſh, it immediately ulcerates, and unleſs ſpeedy remedies are applied, the inflammation ſoon ſpreads through the body; for theſe reaſons, after felling it, it is found neceſſary to leave it till thoroughly dried, in order to its being worked without danger; and then appears the beauty of this wood, which is exquiſitely variegated and veined. Such is the malignity of this tree, that if a perſon happens to ſleep under it, he is ſoon awaked, finds his body ſwelled, and continues to be in great danger and tortures, till relieved by the application of oil, and other remedies. See De Ulloa's voyage.

Mineral effluvia, are commonly very dangerous. The copper mines at Falun in Sweden emit a vapor, which is to be ſmelt throughout the province, and falls in the form of a powder which appears to be a real copper. This powder has the reputation of being very prejudicial to plants, but according to the obſervations of Linnæus is not ſo to man. There often ariſes from tin and coal mines, a vapor which kills inſtantaneouſly.

M. de Haller includes amongſt the mineral vapors, the ſuffocating exhalations of Pyrmont, and Schwalback: the famous exhalation from the Grotto del Canini, and from Veſuvius; all which ſeem to deprive the air of its elaſticity, to deſtroy ſound, and to ſuffocate ſuddenly. They who work on antimony and mercury, are ſubject to vertigo and hypochondriacal affection. I had occaſion when at Clauſtal and Cellerfeld to ſee how much the period of life is ſhortened in mines. The miners generally die at the age of thirty or forty; very few of them attain their fiftieth year. Their moſt frequent diſeaſe is the colic, which they call *huttenkatz*. There occur in it a violent conſtipation, the foeces that are voided appear like hard and dry globules, and Dr, Spangenberg, an Hanoverian phyſician, has often ſeen on them a film which had the appearance of litharge. Theſe patients are ſubject to ſyncope, palpitations of the heart, vomiting, ſpaſms, pains in the limbs, and palſy.

Iſelmann, who has written on this diſorder, attributes it, with Stockauſen, wholly to the lead. He ob-

obſerves, that the bad effect of the lead begins to appear from the moment they firſt work the mine. A black duſt ariſes, which attaching itſelf to the ſkin, blackens the feet and legs of the workmen ſo much, that they are unable to remove it. He conſiders the roaſting of the ore as leſs dangerous, altho' it is by this operation that the ſulphur and arſenic are evaporated, and attach themſelves eaſily to the body. He obſerves, that the reduction of the metal, is much more noxious, eſpecially when the ſun and the humidity of the atmoſphere prevent the air from paſſing freely thro' the chimnies. Hence it is, according to him, that the workmen who are employed in reducing litharge to lead, are extremely ſubject to the dry belly ach.

The ſame writer remarks that the refiners of ſilver are expoſed to ſtill greater dangers, becauſe in this proceſs, they are obliged to blow with bellows upon the ſurface of the metals, in order to ſeparate the lead from the ſilver; and conſequently, they are the more expoſed to the metallic effluvia which excite the colic. The lead becomes volatile, even in the melting; Iſelmann having obſerved, that the duſt which attaches itſelf to the furnace, is a true lead, and may eaſily be reduced. One even ſees a true litharge on the faces of the workmen, which is fixed there by the ſweat that flows from them during the proceſs. The miners employed at Ramelſberg, near Goſlar, and who by means of exploſion, open the rocks which abound with vitriol, lead, ſilver, copper, and ſulphur, and who work naked, told me, that a mineral vapor, ſometimes eſcaped, which ſuddenly killed thoſe who were expoſed to it. From the mines of Quwekna in Norway, there likewiſe ariſes a moſt noxious vapor. This vapor forms a kind of film on the ſurface of the water which is in the mine. If this pellicle is torn with the end of a ſtick, they who are near it inſtantly die (*c*). The bodies of ſeveral miners who had been ſuffocated by this vapor, preſerved the natural flexibility of the body when alive, but an inſupportable ſtench iſſued from their mouths. Flame is extinguiſhed the moment it is plunged into this vapor. Some-

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(*c*) The *choke damp* and *fire damp* (the word *damp* in the German and Saxon languages, ſignifying *exhalation*) have long been known amongſt miners. The *choke damp* is heavier than common air, and lies at the bottom of pits, or in caverns, extinguiſhing candles and killing animals that breathe in it. The *fire damp* is lighter than atmoſpheric air, taking its place near the roofs of ſubterraneous places, and being liable to take fire, and explode like gunpowder; but it was Mr. Boyle who firſt obſerved that elaſtic fluids, differing eſſentially from the air of the atmoſphere, but agreeing with it in the properties of weight, elaſticity and tranſparency might be generated from ſolid ſubſtances, and this he called *factitious* or *artificial air*. Succeeding philoſophers improved on this diſcovery, but we are indebted to ſome very ingenious men of this age and country, and above all to Dr. Prieſtly, for a minute and ſatisfactory inveſtigation of this intereſting branch of knowledge. Air, ſimilar to the *choke damp*, beſides, having been diſcovered in various caverns, particularly in the *Grotto del Cane*; had alſo been obſerved on the ſurface of fermenting liquors, and had been called *gas* (which is the ſame with *geiſt* or ſpirit) by Van Helmont, and other German chymiſts; but afterwards, it obtained the name of *fixed air*, eſpecially after it had been found to exiſt in a fixed ſtate in

Sometimes there ariſes in mines, a very fatal vapor which takes fire of its own accord or on the approach of flame, and ſometimes explodes with ſuch

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in alkaline ſalts, chalk, and other calcareous ſubſtances. It has likewiſe been called *mephitic* and *fixable*, and theſe names ſeem not only applicable to what is diſtinguiſhed as *fixed air*, but to the other kinds of factitious air, which are equally noxious when breathed by animals, and are all capable of being imbibed by ſome ſubſtance or other, and conſequently of being fixed in them. It is obſerved, that the preſence of this *fixed air* in any ſubſtance, renders it *mild*, as in chalk, for inſtance, and that on being deprived of it by fire, or any other proceſs, it becomes cauſtic. The Pyrmont, and other mineral waters which have what is called an acidulous taſte, are found to owe their peculiar flavor, briſkneſs, and medicinal virtues, to this ingredient. Water is capable of imbibing more than its own bulk of fixed air, and thus impregnated, will diſſolve iron, and thereby become a ſtrong chalybeate. Fixed air is 1 ½ heavier than common air, and is deſtructive to animal life. Inflammable air, differs from the fixed air, being ten times lighter than common air; it ſeems to conſiſt of an acid vapor united with *phlogiſton*, and reſembles the *fire damp* in taking fire and exploding on the approach of flame. It is to be procured from every inflammable ſubſtance, but neither bladders nor corks are capable of confining it. Plants grow in it without deſtroying its inflammability, and it kills animals as ſuddenly as fixed air. It has a ſtrong and offenſive ſmell, which is of three kinds, according as it is procured from animal, vegetable, or mineral ſubſtances. By long agitation with water it becomes compatible with animal life, and in proceſs of time even acquires the power of extinguiſhing flame. Diſtilled water may be made to imbibe a fourteenth part of its bulk of inflammable air, but no change is thence produced in the taſte of the water. Nitrous air is obtained from iron, copper, and ſome other metals by the nitrous acid only, and from gold and the regulus of antimony by aqua regia. When mixed with common air, it proſuch force as to carry the bodies of the miners to a conſiderable diſtance. Browne ſpeaks of a rock in Hungary, which altho' impenetrable to the inſtruments of the workmen, gives vent to a very dangerous exhalation. We read of a mountain in Phrygia, which formerly exhaled a peſtilential vapor that was fatal to all thoſe who approached to it There is a cavern in Hungary, which emits a ſulphureous vapor of ſo penetrating a nature, that notwithſtanding the waters through which it paſſes, it quickly deſtroys animal life. Similar vapors are obſerved in different countries, and produce ſimilar effects.

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duces a conſiderable diminution of it, attended with heat; and it is remarkable, that in proportion as common air is rendered leſs fit for reſpiration by the flame of a candle, by the fumes of charcoal or by animal reſpiration, it is leſs affected by nitrous air. This latter, therefore, affords a teſt by which the purity of any other air may be determined. I have ſeen a very ſimple and ingenious inſtrument, contrived for this purpoſe, by the celebrated Abbé Fontana. Nitrous air does not ſeem to differ in ſpecific gravity from common air, but plants die very ſoon, both in nitrous air, and in common air ſaturated with it. It is in ſome degree miſcible with water, and imparts to it an acid and ſubaſtringent taſte. It has been found to prevent putrefaction, and to reſtore putrid ſubſtances to ſweetneſs. It diminiſhes in bulk by ſtanding long in water, but it may be kept in a bladder better than moſt other kinds of air.—Theſe properties of mephitic air, being for the moſt part diſcoveries poſterior to the publication of Dr. Z's work, it was thought right to give this conciſe account of them in a note—for a more minute detail, and a deſcription of other kinds of factitious air, ſuch as acid and alkaline air, the reader is referred to the works of Dr. Prieſtly and others on this ſubject.

The ſeveral exhalations, with which the air becomes occaſionally impregnated, may perhaps carry into diſtant countries the unknown cauſes of diſeaſes. It ſeems however that in general, the vapors, the exhalations, and other principles, with which the air is impregnated in certain countries, and in certain ſeaſons, are very different in their nature. We may conclude this from the variety of their effects. Sometimes we obſerve, that it is one claſs of animals that is affected with an epidemic, and ſometimes another. Sometimes man alone is incommoded, and ſometimes both man and other animals ſuffer at the ſame time from the ſame ſtate of the air. The nature of theſe principles, would therefore ſeem, to be abſolutely different, or unable to act in the ſame manner, and at the ſame time, on the ſeveral ſpecies of animals. All theſe ſeveral vapors we have deſcribed, and which, either of themſelves, or accidentally, become prejudicial to life and health, are introduced into the ſyſtem, either by the ſtomach, or the lungs, or the abſorbing pores. All theſe circumſtances ought to be carefully attended to. M. de Haen tells us that fatty ſubſtances, ſuch as butter, lard, and fat meat, prevent the bad effects of the leſs active vapors in mines. This is a proof that in certain circumſtances the ſtomach is the firſt affected.

Beſides theſe exhalations and vapors which are immediately noxious or fatal, the air is likewiſe loaded at certain ſeaſons with the effluvia of plants, and even with an infinity of minute and imperceptible inſects, which may be introduced into our bodies either directly or indirectly with our food. From theſe, therefore, may reſult diſeaſes of various kinds, and even extremely dangerous ones.

Theſe are not the only occaſional and noxious contents of the air. The fumes of charcoal have ſometimes deſtroyed ſeveral perſons at once, in confined rooms where there was no current of freſh air. An infant has been ſeen to die ſuddenly from the fumes of a candle being blown under its noſe. The fume of lamps is no leſs dangerous, and has indeed been fatal to many perſons. Nothing is more common, nor more dangerous, than to ſee people ſetting in ſmall cloſe rooms with ſeveral candles burning, and without renewing the air of the apartment. I have ſeen many artiſts, eſpecially in winter, incommoded with the fumes of theſe candles, and unwilling at the ſame time to acknowledge it, altho' they ſeemed to labour for breath even while they ſpoke to me. The effluvia ariſing from newly painted rooms have more than once deſtroyed whole families, or rendered them paralytic. The exhalations from lime and freſh mortar, have occaſioned a ſingular and inceſſant ſneezing which ended in death. Nothing is more commonly known than the fatal effects of the *gas* which eſcapes from fermenting liquors. I myſelf have often felt a ſlight dizzineſs on going into my cellar, altho' it is by no means one of the beſt furniſhed. I was almoſt deprived of all feeling on theſe occaſions. Others have died ſuddenly from the ſame cauſes.

The vapor that ariſes from hay, which heats when it has not been ſufficiently dried, carries men off in a kind of intoxication, and eſpecially if the heat is ſufficient to break out into flame, as ſometimes happens. The fire in ſuch caſes is extremely rapid, becauſe it does not begin till the greater part of the hay is diſpoſed to take flame. In general, all theſe exhalations are as fatal as too ſtrong a doſe of brandy would be, and carry off the patient in a ſtate of lethargy, or by a complete and conſequently mortal apoplexy.

The air is likewiſe violently affected by the winds. It is impoſſible to determine, with preciſion, the effects of any particular wind, becauſe the ſame wind will be very different in its effects, at different times, and in different countries. The winds in general are diſtinguiſhed into ſea and land winds. The latter are conſidered as cold and dry, and the former as hot and humid. There are winds which blow conſtantly during certain ſeaſons, as the Monſoons for inſtance. The ancients diſtinguiſhed all the winds into *Southerly* and *Northerly*. "Of the "winds", ſays Ariſtotle, "ſome were called ſoutherly "and the others notherly. The weſterly winds "were referred to the latter diviſion, becauſe they "are cold, and the eaſterly winds to the firſt of "theſe claſſes, becauſe they are warm. Theſe "laſt follow the courſe of the ſun, whereas the "others blow in oppoſition to it. This diſtinc"tion was regulated by the difference obſerved in "winds, with reſpect to their being hot or cold." Such likewiſe, was the principal diviſion adopted by Hippocrates, relative to the theory he formed of the effects of the winds. It was chiefly from their bracing or relaxing effects, that he conſidered the ſoutherly or northerly winds, as hot or cold ſimply, or as hot and moiſt, or hot and dry, or cold and humid, or cold and dry. This theory ſeems to us to be much too confined in certain reſpects. The long ſea voyages which were unknown to the ancients, but which now a days expoſe ſo many Europeans to the particular winds of ſo many different climates, render it neceſſary for us at leaſt to be acquainted with the more general effects of theſe ſeveral winds.

The land winds are in general pretty healthy, becauſe they are dry. But there are ſome exceptions to this. In the Iſland of Java, for inſtance, the land winds are extremely dangerous, becauſe they make an infinitely ſtronger impreſſion on the heated body in which the perſpiration is very great, than happens in Holland in the midſt of the coldeſt winter.

Sea winds are uſually conſidered as the warmeſt. In general, the air of Iſlands is much hotter than that of Continents; but there are many ſouthern countries, that are much colder than others, and this merely from their different expoſure to the winds. Sailors commonly judge of the proximity of land, from the increaſed freſhneſs of the wind that blows towards them. The ſea wind brings with it ſuch a burning heat to the Iſland of Barbadoes, that it can be compared only to that which blows over the deſerts of Lybia. Altho' this Iſland is extremely well cultivated, and fertile in ſugar, tobacco and indigo, and is inhabited by more than fifteen thouſand Engliſh, yet the climate is in general unhealthy. Jamaica is expoſed to exceſſive heats, but the cool ſea breezes which ſet in every morning at ten o'clock render the heat more tolerable. Without theſe that Iſland would be a true deſert. The ſea breezes are of the ſame uſe in Batavia. Very hot winds are pretty uniform in their effects in different countries. In 1705, there was felt on the 30th of June at Montpellier a wind ſo exceedingly hot, that many thermometers were burſt, all the Pendulums advanced, and the leaves of the trees were dried up. A refreſhing rain very happily removed the fears of the inhabitants. Proſper Alpinus tells us, that the winds are ſo hot at Grand Cairo, that they ſeem to flow from a burning ſource. He adds, that when theſe winds prevail, the inhabitants become extremely languid, loſe their appetite, and are tormented with an exceſſive thirſt, which no liquors can relieve. Strangers are obliged to ſhelter themſelves in ſubterraneous places, till the violence of theſe winds are abated.

Kempſer relates, that the winds are ſo ſcorching on the borders of the Perſian Gulph, that travellers are ſuddenly ſuffocated, unleſs they cover their heads with a wet cloth; but that, if this be too wet, they immediately feel an intolerable cold, which would become fatal to them, if the moiſture were not ſpeedily diſſipated by the heat. Chardin tells us that the Perſians call this ſamy-el, or the poiſonous wind. This wind blows from the middle of May, till the middle of Auguſt; and not only is fatal to many, but leaves thoſe whom it deſtroys with all the appearance of life. This wind, which blows at

Baadi-Samuur about the dog days, brings as much heat as if it iſſued from a volcano. The beaſts in the field are ſuffocated by it. The Arabs preſerve themſelves from its effects, by covering their mouth and noſtrils and eyes. Very fatal winds are likewiſe experienced on the coaſt of Coromandel, and other places. It is obſervable of theſe winds, that the greater their heat is, the ſhorter is their duration.

There prevails at Malabar, in April and June, from ſeven in the morning till noon, an extremely hot land wind, which the beſt conſtitutions can with difficulty withſtand. The Europeans are particularly ſenſible of its bad effects; many of them have water poured on them from morning till night, in order to moderate the fire that devours them.

On the other hand, the cold winds produce different effects in different countries. Some writers are of opinion, that the northerly winds are more frequent in Europe now, than they were an hundred years ago. To this cauſe, many have attributed the greater frequency of diſeaſes of the joints now, than formerly.

There is ſelt in Spain, a freſh wind, which blows from the mountains of Galicia, and preſerves the city of Madrid from the bad effects of the putrid exhalations, with which it abounds ſo much. But it feels extremely cold and penetrating to the Spaniards, when it blows ſtrongly, or comes on ſuddenly. It even occaſions incurable palſy, when people are expoſed to it, after being relaxed by the great heats. The Spaniards call this wind *bubas del ayere.*

The northerly winds, and thoſe from the north eaſt, which are ſtill much colder, are extremely hurtful to every body in Peru. The northerly winds, which blow in Egypt immediately after the very hot winds, are healthy and refreſhing; but the eyes of the Egyptians, like thoſe of the Greenlanders, ſuffer much from theſe violent ſtormy winds.

When the north wind, which blows from the Pole, paſſes over the frozen ſea towards Nova Zembla, it occaſions ſuch an extreme cold in the parts of Ruſſia it traverſes, that both men and other animals would periſh by it, were they not to ſhelter themſelves from its effects. Middleton felt a ſimilar cold in North America. At Canton, and Hyſchen in China, there ſometimes prevails ſuch an exceedingly cold wind, that the inhabitants are obliged to cloath themſelves with furs, altho they live on the borders of the Torrid Zone. Theſe cold winds are derived from the mountains in the province of Kittay; the ſoutherly winds, which come from the ſouth pole, likewiſe bring with them a great degree of cold. They blow exceedingly cold in the ſtreights of Magellan; and Chili would be uninhabitable, were it not refreſhed by theſe winds. In general, the winds from every quarter, which blow over conſiderable tracks of ice or ſnow, are cold.

The eaſterly and north eaſterly winds are commonly dry. They bring with them but few exhalations, and dry ſeaſons are, in general, the effects of theſe winds. On the other hand there are winds which are exceedingly humid, ſuch as the weſterly and ſouth weſterly. But theſe winds are not always equally moiſt, becauſe this depends on the ſurface over which they blow. If they come from the ſea, or over large tracts of marſhes, they will be humid, and the warmth that accompanies them renders them more active and dangerous.

The winds in general however by agitating and renewing the air of our atmoſphere tend to purify it from noxious vapours, and to render it healthy *(h)*. But ſometimes theſe changes are ſo ſudden

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*(h)* " Dr. Prieſtly having obſerved, that both the air, corrupted by the breath of animals, and that vitiated by other putrid matter, was in a good meaſure ſweetened by the ſeptic part infuſing itſelf into water, he concluded, that the ſea, the great lakes and rivers, which cover ſo large a proportion of the globe, muſt be highly uſeful, by abſorbing what is putrid, for the further purification of the atmoſphere: thus beſtowing what would be noxious to man and other animals, upon the formation of marine and other aquatic plants, or upon other purpoſes yet unknown.

" From theſe diſcoveries we are aſſured, that no vegetable grows in vain, but that from the oak of the foreſt, to the graſs of the field, every individual plant is ſerviceable to mankind; if not always diſtinguiſhed by ſome private virtue, yet making a part of the whole, which cleanſes and purifies our atmoſphere. In this, the fragrant roſe and deadly nightſhade cooperate: nor is the herbage, nor the woods that flouriſh in the moſt remote and unpeopled regions, unprofitable to us, nor we to them; conſidering how conſtantly the winds convey to them our vitiated air, for our relief, and for their nouriſhment. And if den and conſiderable, that great cold comes on in too quick a ſucceſſion to heat, ſo that very oppoſite temperatures of the air may take place in the ſpace of a day, and this will be liable to occaſion effects that will be more or leſs dangerous according to circumſtances.

The winds may become exceedingly noxious, from the unhealthy principles of the air which they take with them in their courſe. Altho' in general the winds do not traverſe a vaſt extent of country, and the ſea and land winds, are commonly oppoſed to each other, yet ſometimes they have been known to blow over immenſe tracts of land and ſea, carrying the ſeeds of the moſt fatal epidemics into remote countries.

There are ſome winds, which are almoſt peculiar to certain provinces, and blow very rarely in others. In ſome, the northerly, and in others, the ſoutherly winds are the moſt prevalent. The ſame wind will be hot in one country and in a certain ſeaſon, whilſt it is cold at the ſame time in another; or it will be dry perhaps in the one, and wet in the other. All this proves how impoſſible it is to form a ſatiſ-

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if ever theſe ſalutary gales riſe to ſtorms and hurricanes, let us ſtill trace and revere the ways of a beneficent Being; who, not fortuitouſly, but with deſign, not in wrath but in mercy, thus ſhakes the waters and the air together, to bury in the deep thoſe putrid and peſtilential *effluvia*, which the vegetables upon the face of the earth, had been inſufficient to conſume."—*Sir John Pringle's Diſcourſe on the different Kinds of Air.*

a ſatisfactory theory of the effects of particular winds.

The cauſe of winds will ſometimes throw ſome light on the healthineſs or fatality of their effects according to places and circumſtances. This theory does not, indeed, ſeem to me to be, as yet, ſufficiently eſtabliſhed, to afford any certain concluſions. I will relate in few words, what ſeems to have been ſaid with the greateſt probability on the ſubject.—The rarefaction of the air may be the cauſe of wind. The denſer air of ſubterraneous places finding more freedom from the rarefaction of the air above, has a natural tendency to expand itſelf, ſuppoſing it to contain no principles which weaken or wholly deſtroy its elaſticity. This ſubterraneous air will therefore ſpread itſelf with more or leſs force and rapidity, according as the rarefaction of the air above is in a greater or leſs degree, and proportioned to this will be the wind. The heat which may be excited in different matters within the bowels of the earth, may likewiſe, occaſion a rarefaction of the ſubterraneous air, which will be forced out with conſiderable rapidity. The air of the atmoſphere, violently agitated, may likewiſe give riſe to other winds.

The waters within the earth, and the immenſe ſtrata of pyrites, which are the great fuel of ſubterraneous fires, will likewiſe agitate and rarify the internal air, which will be driven out from theſe laboratories of nature with exceſſive exploſion. The water that exhales from the ſea, and rivers, and lakes, to-

together with the melting of the ſnow and ice which cover immenſe tracks both of earth and ſea, will all co-operate in the production of winds. The rarefaction of a conſiderable portion of the atmoſphere, is ſometimes the occaſional cauſe of the moſt impetuous hurricanes; this particularly happens in the caſe of earthquake. The matters which occaſion the eruption, weaken or deſtroy the ſpring of the air to ſuch a degree, that the more diſtant air ruſhes towards this point with wonderful rapidity and force.

But the principal cauſe of the agitations of the air which produce wind, is to be ſought for, according to the celebrated Muſchembroeck, in the efferveſcence of various exhalations and vapors, which concentrate and mix together with more or leſs activity. It is a truth, that the moment two different exhalations mix and efferveſce together, they expand and generate an elaſtic vapor, do themſelves, acquire a greater ſpring, and thus act with a proportionate force on the circumambient air. The greater part of theſe efferveſcences excite heat, and this is the reaſon why, in ſtorms, the air is uſually warm, whether they occur in ſummer or winter. To theſe ſame cauſes likewiſe are to be aſcribed thunder ſtorms, and even the fall of lightning in the ſereneſt and the calmeſt weather, when no cloud appears. This too is the reaſon why the moſt violent ſtorms ſuddenly ariſe in the midſt of the moſt perfect calm, as is often experienced, to the great danger of ſailors, in the Mediterranean; and on the continent in every country. This is the reaſoning of Muſchembroeck. But electricity is now known to act ſo great a part in the phenomena of nature, that perhaps, all theſe ought to be referred to that principle (*i*). It is very certain that this matter, whatever may be its true nature, ſeldom manifeſts itſelf without an extreme degree of violence and activity; but natural philoſophy is not yet ſufficiently enlightened, to determine with preciſion how this matter contributes to the formation or activity of winds.

Every day's experience proves to us that the vapors and exhalations with which the air is loaded, are not always in conformity to the ſerenity of the heavens. The meteors which appear under the cleareſt ſky, and the miſchievous effects produced by their exploſion, ſeem to prove that theſe vapors may be a long time, and in great quantity, in the atmoſphere, without its being either obſcured or agitated by their preſence. The moſt lowering and threatening ſky, often becomes clear, and the clouds are diſperſed without either wind or tempeſt: it is therefore, only by their effects, that we can judge of the preſence of theſe principles in the air. We have reaſon to conclude, only, that they muſt neceſſarily act with an enormous force, to produce

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(*i*) The learned and ingenious Signior Beccaria, does this.—He even refers ſnow, hail and rain to the ſame cauſe.—See his *Elletriciſmo artificiale e naturale,* and *Prieſtley's Hiſtory of Electricity.*

winds which overturn the largeſt trees (*k*), as happened within theſe few years at Saumur; and even towers and conſiderable edifices.

In general, a moderate wind, whether it be cold or hot, is never of itſelf ſo pernicious as when it is violent. The wind is prejudicial to health, only in as much as it is either too dry, or too moiſt; too hot, or too cold; or as it brings with it accidental principles, from exhalations, which are foreign to its nature. As there are many countries in which the

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(*k*) The ingenious writer of the *Account of the European Settlements in America*, gives the following ſtriking and melancholy picture of a Weſt Indian hurricane. "It is in the rainy ſeaſon, principally in the month of Auguſt, more rarely in July and September, that they are aſſaulted by *hurricanes*, the moſt terrible calamity to which they are ſubject from the climate. This deſtroys, at one ſtroke, the labours of many years, and fruſtrates the moſt exalted hopes of the planter, and often, juſt at the moment when he thinks himſelf out of the reach of fortune. It is a ſudden and violent ſtorm of wind, rain, thunder and lightning; attended with a furious ſwelling of the ſea, and ſometimes with an earthquake; in ſhort, with every circumſtance which the elements can aſſemble, that is terrible and deſtructive.

"First they ſee, as a prelude to the enſuing havock, whole fields of ſugar canes whirled into the air, and ſcattered over the face of the country. The ſtrongeſt trees of the foreſt are torn up by the roots, and driven about like ſtubble. Their wind mills are ſwept away in a moment. Their works, the fixtures, the ponderous copper-boilers, and ſtills of ſeveral hundred weight, are wrenched from the ground, and battered to pieces. Their houſes are no protection. The roofs are torn off at one blaſt, whilſt the rain, which in an hour riſes five feet, ruſhes in upon them with an irreſiſtible violence."

winds are pretty regular and uniform, it will be right to attend to the times, at which they begin to be felt, and to the countries from which they blow. In countries where the winds are irregular, and depend on unknown cauſes, the cauſes of prevailing epidemics will be more difficult of diſcovery.

Notwithſtanding all the qualities more or leſs noxious of the air, and the different phenomena that reſult from them, Man lives and enjoys his health in every country of the earth. In length of time, Europeans accuſtom themſelves to the heat of Carthagena, and as people advance in life they reſume the appearance of health. The natives of an unhealthy climate ſupport it much better than the ſtrangers do who come amongſt them. The inhabitants of Malabar bear very well with their air, and notwithſtanding the diſeaſes that prevail with them every year, great numbers of them live to be very aged. But the Europeans who come amongſt them, find their health extremely incommoded, and commonly experience a very dangerous fever, after their arrival. The Daniſh miſſionaries ſeldom attain their fiftieth year, and indeed the greater number of them die before they have been there four months.

It was obſerved, that the Ruſſians who were at Berlin after the taking of that city, were unable to ſupport, without ſhuddering, the cold which is uſual there in autumn, and which does not ſenſibly affect the inhabitants. A temperature of climate, to which we have never been accuſtomed, is every where inſupportable.

Hippocrates, Sydenham, and others of the beſt obſervers, have remarked that the ſame epidemical diſeaſes have prevailed under very different ſtates of the air. There may doubtleſs, in epidemical diſeaſes, be certain common or particular characters which depend on cauſes that are but little, or not at all known, and which, are therefore ſo many exceptions to general rules, ſo long as they continue to be unknown to us. According to the obſervations of Mr. Albrecht Stapfer, the village of Oberwyl in the canton of Berne, was attacked in the year 1749 with a moſt violent dyſentery, whilſt the other neighbouring villages continued in perfect health. In the following year this village was free from the attack, altho' it made great ravages in all the neighbouring ones, and yet it is ſeparated from them by no foreſt or mountain. I have occaſion, almoſt every year to obſerve ſomething like this. Whilſt I am now writing, the dyſentery is very fatal to one of our villages, where it began to appear ſeven weeks ago, and yet others in the neighbourhood are perfectly free from complaint (*a*) Notwithſtand-

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(*a*) The dyſentery like all other contagious diſeaſes is ſpread by communication with infected perſons, cloaths, privies, &c. and therefore it is not ſtrange that one village ſhould eſcape, if its inhabitants were careful to avoid a communication with their infected neighbours. Sir John Pringle relates a curious fact ſtanding all this, however, there are certainly very often known cauſes, why any particular diſeaſe is more prevalent in any particular place, or in any particular ſeaſon, than in others, altho' a particular temperament of the atmoſphere may occaſionally give malignancy to a diſeaſe, that is not dangerous of itſelf, and vice verſa.

Thierry has demonſtrated, and indeed the obſervations we have related, prove, that the air may be very different in neighbouring countries. Sydenham obſerves, that the diſeaſe which is the moſt prevalent at the time of the autumnal equinox, commonly gives its particular character to the remaining diſeaſes of the year. Lord Bacon recommends it to us, to ſeek for the cauſes of a prevailing epidemic, leſs in the preſent, than in the preceding ſtate of the atmoſphere. I have often had occaſion to ſee the propriety of this reflection.

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fact which confirms this doctrine. He informs us, that three companies encamped at a ſmall diſtance from the lines, and thus removed from the contagion of the privies, almoſt entirely eſcaped the dyſentery, only one man having been taken ill of it, whilſt the diſtemper raged conſiderably amongſt the main body, and yet ſays he, "these men breathed the ſame "air, the contagious part excepted, uſed the ſame victuals, "and drank of the ſame water". This immunity continued for ſix weeks, when theſe companies joined the reſt of the army, and were at laſt infected.

It cannot be denied, however, but that there is ſomething regular and conſtant in the effects of the different qualities of the air. I have, I think, ſufficiently proved, that certain qualities of the air are uniformly noxious, both to Man and other animals in every climate. This proves the truth of an obſervation made by Hippocrates, that there are times when almoſt all the diſeaſes that occur, are extremely malignant, and in general fatal: ſo that, coughs, phthiſis, angina, are all equally mortal. The ſame venerable writer, aſſures us likewiſe, that the truth of his obſervations had been confirmed in countries very different from each other, and in a variety of ſeaſons and climates.

With regard to the manner in which meteorological obſervations are commonly made, there ſeems to be a manifeſt error in eſtimating the ſenſible qualities of the air only by the variations of the barometer or thermometer. The writers who have aimed at informing themſelves in this manner of the conſtitution of the air, have confined themſelves to matters which could yield them no other information, than that of the momentary ſtate of the atmoſphere: and it is not to this, but to the continuance, or exceſs of the ſame temperature, that the attention of the phyſician ought to be directed; becauſe the epidemics which reſult from the temperature of the ſeaſons, never take place but from theſe two cauſes, and it was in this way, that Hippocrates aimed at tracing the ſource of epidemics. Each ſeaſon ſeems to have a chaa character peculiar to itſelf, and conſequently has a certain and peculiar influence over the living body, as Hippocrates very well obſerved. This is the cauſe to which we are to aſcribe the diſeaſes of the ſeaſons, and if they vary greatly from their uniformity and order, an epidemical diſeaſe may naturally be expected.

## CHAP. VI.

### *Of Aliment, conſidered as a remote cauſe of diſeaſes.*

MEN ſuffer from errors in diet, not ſo much from their ignorance of the uſes and properties of aliments, as from their inattention to the effects of theſe errors. The antients uſed to ſay, that acute diſeaſes came from heaven, but that chronic complaints were the offspring of our irregularities. A modern writer has very well obſerved, that the ſtroke of death is inflicted by the hand of providence, but that we ourſelves embitter it by our bad conduct. All muſt die: this is a law to which all the animated beings of this globe are ſubject, but the lingering agonies which lead us on to the grave, are commonly the effects of our own follies.

Bread is a very general article of our food. There is not indeed much to be ſaid on the ſubject of bad bread; I have obſerved, however, that it is often very hurtful to children, and that it gives them a pale countenance, and breeds worms. Shebbeare is of opinion, that the rickets are ſo common in France amongſt the children, only becauſe they eat bread, which by its acidity deſtroys the calcareous ſubſtance of the bones, and reduces them to a ſtate of cartilage. This diſeaſe is not leſs common with us, but I aſcribe it to a very different kind of acidity, of which I ſhall ſpeak hereafter.

The avarice of the London bakers has led them to an invention which is extremely prejudicial to the health of the community, and this is the putting alum into their bread, in order to make it unnaturally white. Theſe people having diſcovered that their bread generally occaſioned coſtiveneſs, thought of obviating this complaint by mixing jalap with their flour, and this had indeed a purgative effect. Dr Maningham has taken great pains to point out the different methods of ſophiſticating bread, together with the marks by which they may be aſcertained, and the diſeaſes that reſult from them.

It ſometimes happens that bread, naturally, and without any human artifices, becomes extremely noxious to health. This may happen when the corn fields abound with *Darnel* (*Lolium*) or with *Cockle*, (*Agroſtema Githaco*) or when the corn itſelf is ſmutted.

Darnel, in the opinion of the beſt botaniſts is a very poiſonous plant, and in cold damp ſeaſons it grows in ſuch abundance in the fields, that the ignorant farmer fancies all his corn is tranſmuted into Darnel. The ſeeds of this plant, when powdered, are a little dark coloured, and of a ſweetiſh taſte; but it is difficult to diſtinguiſh flour that is poiſoned with it from any other. Its effects are to excite uneaſineſs, vomiting, vertigo, delirium, convulſion, and palſy *(b)*. Targioni tells us that he ſaw, with no little aſtoniſhment, much of this plant cultivated in the neighbourhood of Camuglian, where the inhabitants, in order to give their bread an agreeable taſte, mix it with it, in the proportion of one ſixth part, and this without ſeeming to have their health affected by it.

Needham deſcribes two ſorts of cockle; in the one, the ſeed is converted into a black powder; and in the other, there are perceived little elaſtic fibres, which have been conſidered as *Animalculæ*. M. de Juſſieu aſcribes the firſt ſort to the corruption of the ſeed, and the ſecond to the corruption of the flower. This ſeed gives a very bitter and intolerable taſte to bread, ſo that it ſeldom occaſions an epidemic diſeaſe, becauſe the people do not willingly eat ſuch bread. In France, however, bread of this ſort has been known to occaſion gangrene.

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*(b)* The ancients who were acquainted with the bad qualities of this plant, ſuppoſed it to affect the eyes, by rendering them dim. *Ovid* ſeems to allude to this, in the following verſe,

*Et careant loliis oculos vitiantibus agri.*

Faſt. lib. 1.

Smutty Rye is the effect of a cold ſeaſon, and when made into bread becomes a true poiſon (*c*). The limbs, and eſpecially the feet and legs, of thoſe who eat it, are firſt benumbed, and then gradually aſſuming a black colour, become hard and as fragile as glaſs, till at length they ſeparate from the reſt of the body, before this ſeems to be attacked. Dodart examined this corrupt corn with great accuracy. He found the ears black on the outſide, but of a whitiſh colour within, and of a much harder texture than the natural rye, being indeed ſomewhat tough. This ſmutty rye has by no means a bad taſte, and theſe diſeaſed ears are as large and as long as the beſt.

Dr. Lang, Phyſician at Lucerne, in a very ingenious diſſertation on this ſubject tells us that the grains of bearded or ſmutty rye (*d*) are ſo many preternatural excreſcences, of a dark complexion, hard, combuſtible, and more or leſs long and thick, affording a little of the taſte of rye, which leaves, however, a ſlightly acrid impreſſion on the palate. Within, he has found a minute and almoſt inviſible worm. In general there are ſix or ſeven of theſe excreſcences in an ear of rye, but in very wet ſeaſons, the number is ſometimes increaſed to twelve or more.

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(*c*) Hoffman ſpeaks of the *ſecale corniculatum nigrum* as a poiſon.

(*d*) The French call this degenerated rye *ergot*, from its reſemblance to a cock's ſpur.

It has been remarked in France, that rye becomes ſmutty in the greateſt quantity, in a cold, damp ſoil, and in very rainy years; and that the ſort of rye which is ſown in March, and with us called ſummer rye, is far more ſubject to this diſeaſe, than that which is ſown in autumn, or the winter rye. Mr. Chatton, a Surgeon at Montargis, tells us that the rye is diſeaſed in this manner almoſt every year in Sologne, and Berry, eſpecially in light and ſandy land; that there are few years in which this does not happen; but that theſe unhealthy grains do no harm, unleſs when in conſiderable quantity; and that they commonly appear moſt when a wet ſpring is ſucceeded by a very hot ſummer.

Smutty Rye is however not always poiſonous. Dr. Lang had occaſion to obſerve that the rye bread which contained a certain quantity of theſe diſeaſed grains, produced none of its uſual bad effects. He therefore concludes, that it is noxious, only when the excreſcences we mentioned are long, and large and thick, and when they appear in a wet ſeaſon.

Theodore Zwinger the elder doubts whether gangrene be really the effect of ſmutty rye, becauſe it grows in conſiderable quantity in the canton of Baſil, where it is ſent to the mill with the other rye, and being made into bread, is eaten without any inconvenience. But Baron Bondeli, the Pruſſian miniſter in Switzerland, obſerved in one of his letters to Dr. Lang, that the phyſicians at Berne had at firſt conſidered the diſeaſes we have mentioned, as the effects of a particular ſtate of the air; but had been convinced by a great number of very accurate experiments, that they ought truly to be referred to the corrupted rye. Ritter complains alſo, that at the beginning of the preſent century, the diſorder which aroſe from this ſame cauſe, was likewiſe attributed, by the phyſicians at Berne, to the exceſſive cold, to the want of cleanlineſs amongſt the peaſants, and lower claſs of people, and to their improper diet; and yet it is certain, that this diſeaſed corn kills many animals, and that its fatal effects on man have been often experienced. This diverſity of opinion ſeems to ariſe from the ſmutty rye, as we have related, not always producing the ſame effects.

Theſe diſeaſes were noticed in France in the 16th and 17th centuries; but they made the moſt conſiderable ravages towards the cloſe of 1709. Lemery tells us, that from the uſe of this bearded or ſmutty rye, the limbs blackened and detached themſelves from the ſound parts, and that no remedies were found capable of ſtopping the progreſs of the diſeaſe. There were many melancholy examples of theſe effects in the French hoſpitals, particularly at Orleans. The French academy of ſciences, publiſhed, ſome years ago, an account of the gangrene produced by theſe means. It is impoſſible to read this account without ſhuddering. A hog died ſoon after being ſed with this bad corn; all the limbs of this animal became gangrenous. In the patients who were in the hoſpital at Orleans, the mortification ſometimes ſpread only to the knees, ſometimes it reached to the thighs; the lower extremities were found to be the moſt commonly affected.

fected. Amputation ſeldom ſucceeded in theſe caſes. Of an hundred and twenty patients whoſe legs were taken off by the French ſurgeons, not more than five eſcaped. This is what we are told by the academy (*a*).

Similar effects have been obſerved in Germany, tho' in a leſs degree, from the uſe of grain of this ſort. This diſeaſe has likewiſe raged with great violence in the cantons of Zurich, Berne, Lucerne, and Fribourg. It was extremely fatal in the firſt of theſe cantons in 1716. In 1709 it appeared in the county of Lenzbourg. In the canton of Lucerne, it occaſioned the greateſt diſtreſs in 1709, 1716, and 1717. In the firſt of theſe years there were fifty perſons attacked with it within a very little diſtrict, forty-nine of them were happily recovered. The greater part of thoſe who were early in the uſe of ſuitable remedies, did well. Others, who were more careleſs, eſcaped with the loſs of their toes, or of ſome of their fingers, or a foot, or a whole limb. This evil ſeemed to be at its greateſt height in 1709, when the miſerable peaſants were unable to

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(*a*) The reader will probably recollect an account of a poor family at Wattiſham in Suffolk, afflicted with the loſs of their limbs, deſcribed in the 52d vol. of the Philoſ. Tranſ. This diſorder, and that recorded by the French academy, were indeed extremely analogous in their effects; the poor family at Wattiſham ate no rye, but their bread was made from a ſort of damaged wheat, which by the country people is variouſly called clog wheat, or rivets, or bearded wheat.

guard

guard againſt it, by the extreme ſcarcity of wholeſome bread.

Dr. Lang who has given us an excellent deſcription of this diſeaſe, has likewiſe taught us how to cure it, but as this does dot enter into the plan of my work, I beg leave to refer the ſtudious reader to the diſſertation itſelf (*b*). This diſorder was in general preceded by no fever, but with a ſenſe of weakneſs, which was felt either in the thorax or abdomen. If in the thorax, the upper limbs were threatened with the attack; and if in the abdomen, then the lower limbs were likely to ſuffer. Some patients complained of this ſymptom two, three, and even four weeks before the diſorder actually manifeſted itſelf; others felt it only a few days, previous to the attack. There were ſome who were at once ſeized with the moſt terrible ſymptoms without any previous notice; and in the canton of Lucerne, ſome few perſons loſt one or two of their toes without having felt the leaſt pain or inconvenience. The moment the diſeaſe had actually taken place in any limb, it grew cold, and loſt all ſenſe of feeling, and the ſkin became pale, livid and wrinkled, and the cutaneous veins diſappeared. The other parts ſeemed to be unaffected, the functions of the body remaining undiſturbed. When the limbs were wholly benumbed, the patients complained of exceſſive pain, but this pain excited only a ſlight degree of fever;

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(*b*) Beſchreibung des ſchadlichen genuſses der Kornzapfen. Lucerne, 1717. 8vo.

the patients ſleep was always much diſturbed ; ſome complained of thirſt, and others bled inceſſantly at the noſe ; their urine was almoſt conſtantly clear and limpid, few of them complained of head ach, nor did any of them fall from their appetite. The pain of the diſeaſed limbs went on increaſing, together with the other ſymptoms, and in caſes in which remedies were inefficacious, the mortification ſpread from the fingers to the hand and arm ; and from the toes, to the foot and leg, till at length the diſeaſed parts ſeparated from the healthy. From all theſe obſervations Dr. Lang was led to conclude, that this poiſonous rye differs from the generality of poiſons in its effects on the ſyſtem. We ſee it carried through all the nobler organs of the body without exciting in them any ſenſible injury, if we except a ſlight ſtupor of which ſome of the patients complain : it occaſions none of the alarming ſymptoms, to which almoſt all the other poiſons give riſe : it brings on no ſpaſms, no ſtricture of the breaſt, no ſyncope, or fever : but yet, notwithſtanding all this, it is to be arranged amongſt the ſlow and hidden poiſons, for it occaſions no ſenſible difference in the taſte or ſmell of the bread, and it is liable to continue a long time in the body without manifeſting any effects, and theſe when they do appear, are ſometimes ſo ſudden, that they become fatal before any remedies can be thought of.

Altho' this ſort of corn is of all others, capable of being the longeſt preſerved, yet meal of every kind is very ſuſceptible of corruption, and becomes a very dangerous aliment if long kept, and in a damp place. The moſt fatal effects have been experienced from corrupted meal, even in countries the beſt ſupplied with proviſion. It yields a very noxious and penetrating vapor, and a perſon worthy of credit, aſſured me not long ago, that he had been preſent at the diſſection of an unfortunate poor man, who together with a wiſe and three children, were ſuppoſed to have been ſuffocated by a vapor of this kind. The lungs, ſtomach, and inteſtines appeared as if in a gangrenous ſtate.

Worms and the different inſects which generate in flour that has been long kept, are no leſs noxious by the changes they occaſion in this aliment, and which by their preſence is rendered ſtill more dangerous. And yet this, poiſonous as it is, is the food with which the poorer claſs of people are nouriſhed, becauſe it is the cheapeſt.

In many countries, rice anſwers the ſame purpoſes as bread does with us. It is the principal food of the Turks. The Chineſe make uſe of it inſtead of bread, altho' their country abounds with corn. Rice is alſo almoſt the only article of nouriſhment amongſt the Malabars : it is even uſed as bread by people of the higheſt claſs, becauſe no wheat grows on the Malabar coaſt. It is applied to the ſame uſe throughout India. The Chineſe boil it with water; the Malabars, with milk and water, and eat it in vaſt quantities. Bontius tells us, that hot rice is very hurtful to the nerves, that a long continued uſe of it weakens the ſight, and even occaſions total blindneſs; and that this is the reaſon why the inhabitants of Java never eat hot rice.

The other vegetable aliments produce different effects according to their particular nature. In general they ſeem to be more ſuitable to man, than fleſh meat, and thoſe men ſeem to have lived the longeſt, who have eat the leaſt animal food. A vegetable diet ſeems to render us mild and humane, but is leſs calculated for a laborious and active life.

We are therefore not to be ſurprized that Pythagoras ſhould prefer vegetable to animal food; or that the Therapeutiſts, adopting ſimilar ſentiments, ſhould content themſelves with bread and ſalt, adding at the moſt a little hyſop; and uſing only water for their drink. The earlier Greeks confined themſelves to vegetable food, and are ſaid to have decreed divine honours to Pelagus, who firſt taught them to eat acorns, which they conſidered as more healthy than the other vegetables they had been accuſtomed to (*c*).

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(*c*) This like many other tales of the ancient writers is probably fabulous. Man from the ſtructure of his teeth, ſtomach and inteſtines, would ſeem to be deſigned by nature both for vegetable and animal food. Many races of people, who ſo far from being perverted by luxury, are ſtill in a barbarous and uncivilized ſtate, live almoſt wholly on animal food; but there are perhaps none who live entirely either on this or vegetables, if we except the Brachman's and ſome others, who do ſo merely from prejudice of opinion. Dr. Cullen obſerves, that

The regimen of the Spartans, is likewiſe well known in times much later than thoſe, we have juſt now mentioned; a regimen on which they prided themſelves ſo much that Pauſanias, after the battle of Platea, directed two ſuppers to be provided, the one after the Lacedemonian, and the other after the Perſian manner. "Ob-"ſerve," ſays he, "the folly of our enemies, "who accuſtomed to live in this way, fancied "themſelves able to conquer us, who live in ſo "different a manner."

Vegetables and butter conſtitute the principle food of the inhabitants of Bengal, and of Malabar. The traders who paſs from the Coromandel coaſt and Surat, to Batavia, live chiefly on leguminous plants.

All vegetables, however, are not to be conſidered as innocent: without ſaying any thing of thoſe which have a deciſive tendency to a ſpeedy putrefaction, they are apt for the moſt part in certain ſubjects to breed flatus, and much more ſo than animal ſood: but as this greatly depends on temperament, nothing general can be ſaid about it. With ſome people, vegetables have conſtantly pur-

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that the ſtate of the hunter and ſhepherd, is more ſimple and more antient, than that of the farmer or gardener. In cold countries men ſeem to eat animal food in the greateſt proportion. This is the caſe with the Laplanders, but Linnæus tells us, that they obviate its ill effects by a plentiful uſe of ſour milk, and by uſing *Calla*, Menyanthes, and many other plants copiouſly. In hot climates where there is a greater tendency to putrefaction, vegetable food ſeems very properly to be uſed in the greateſt proportion.

gative effects, whereas the Minorquins who ſeed on them ſo much, are almoſt always conſtipated.

The flatulent nature of fruits is well known. Dr. Hales proved long ago, that an apple contains 480 times its bulk of air. Yet I conſider baked apples as a light food, with which, and bread and water, I ſhould be able to live without any danger of flatulency or hypochondriacal affection, if ſuch a kind of life was pleaſing to me. The too free uſe of unripe fruit occaſions cardialgia, colics, diarrhoea, and nervous diſorders.

The dyſentery is almoſt univerſally aſcribed to fruit, although all true phyſicians have ſo clearly proved this opinion to be erroneous. The cauſes of this diſeaſe are in a great meaſure to be ſought for in the ſtate of the air, which by a ſudden tranſition from heat to cold, checks the inſenſible perſpiration, and occaſions increaſed determination to the inteſtines. If the humours there are acrid, dyſentery will take place, and even in people who have eaten no fruit; for we have often occaſion to ſee this diſeaſe manifeſt itſelf, at a ſeaſon when the fruit trees are as yet in flower. It ſometimes prevails likewiſe in cold countries where there is but little fruit, and where the bulk of the people of courſe cannot procure it.

It has been very properly remarked, that the dyſentery is ſometimes occaſioned in autumn, by the inſects that are ſwallowed with leguminous plants, and even with fruit. Decker, who has written an excellent diſſertation on this diſeaſe, tells us it was impoſſible that fruit could in any way have contributed to the dyſentery, of which he gives us the hiſtory, and which made ſo much havoc. He obſerves, that very often when there is the greateſt plenty of fruit, there is no dyſentery; that he has ſeen it attack perſons who had never eaten any fruit, and even infants at the breaſt whoſe mothers had carefully avoided fruit: that the dyſentery which was ſo prevalent and fatal at Nimeguen, had attained its higheſt degree before any fruit was in ſeaſon, and in fine, that they who ate fruit, and they who did not, were indiſcriminately attacked by it.

Every day's experience leads to prove, that the ſummer fruits never occaſion dyſentery. Dr. Tiſſot, aſſerts that no prejudice is more erroneous than this, and that only obſtinate and of courſe unenlightened people can poſſibly ſupport it, becauſe ripe and eſpecially the ſummer fruits, are the true preſervatives againſt the dyſentery (*a*). This proves how

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(*a*) Dr. Tiſſot always made it a rule in thoſe ſeaſons, in which dyſentery was moſt frequent, to eat little fleſh meat, but much fruit; and he affirms, that he never had the ſlighteſt attack of the diſeaſe: and that other phyſicians of his acquaintance, who uſed the like precautions, were equally free from the infection. He tells us, that he ſaw eleven patients in one houſe attacked with dyſentery, nine of whom were tractable, eat fruit, and recovered. The grand mother, and one child whom ſhe loved particularly, and whom ſhe managed in her own way, with burnt wine, ſpices and oil, but no fruit, died. In the year 1751, the dyſentery having deſtroyed almoſt a whole regiment in the ſouth of France, the officers at length purchaſed the entire crop of how juſtly in general that man thinks, who rejects the opinions of the multitude.

Experiments ſeem to prove that grapes contain an immenſe quantity of air. It is certain, that they prove extremely flatulent to delicate people who have not an open belly. I have indeed ſeen a man ſwell and die ſuddenly after eating a prodigious quantity of grapes; but this perſon had been ſubject to the convulſive diſorder, we call St. Vitus's dance.

Oily aliment derived from vegetables is exceedingly noxious, and ſometimes occaſions a real epidemic, eſpecially if much fat and oily animal food is uſed at the ſame time. This ſeems to be the reaſon why the itch prevails ſo conſtantly in the Hebrides (*b*). In Lower Saxony, where people live nearly in the manner that hogs do with us, turnip oil is a very general and moſt nauſeous article of food. The religion of ſome countries prohibits certain religious orders, the uſe of animal fat or butter. Theſe people therefore prepare all their cookery

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of ſeveral acres of vineyard, whither they carried the ſick ſoldiers, and gathered the grapes for thoſe who were too weak to be taken to the field. They who were well, likewiſe, lived chiefly on grapes, and after this ſays Dr. Tiſſot, not one man died, nor were any more attacked with the diſorder.

(*b*) The lower claſs of people in the northern parts of Scotland, and in the Hebrides, get but very little animal food. In the latter they eat great quantities of fiſh, but both there and in the Highlands, there is a great conſumption of milk and vegetables.

with oil: and this is the reaſon why ſo many of them are ſubject to ruptures. Great numbers of them likewiſe void their urine in their ſleep; ſo great is the relaxation produced in all the viſcera by the extreme uſe of oil (*c*). I have obſerved that oil is in general very hurtful to perſons who have weak ſtomachs, and that in theſe it has conſtantly the effect of increaſing indigeſtion.

Milk ſeems to hold a middle place between the animal and vegetable kingdom. In certain circumſtances it is the beſt of all aliments. Hence the ſupreme Being ſeems to have intended it for our firſt nouriſhment. Human milk is indiſputably the ſweeteſt and moſt fluid; next to this comes aſſes milk, and in ſucceſſion mares milk, and goats milk. Cows milk contains the leaſt ſaccharine matter, and is the leaſt fluid of any (*d*). It is obſervable however, that the moſt fluid milk throws out

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(*c*) There ought to be taken into the account here, that theſe religious orders are prohibited the uſe of every ſort of *animal* food, and are therefore confined to fiſh, and vegetables, which they prepare commonly with oil. A moderate uſe of freſh oil is a very uſeful article of diet, when we take with it a proper proportion of annimal food; and it is obſervable, that in Languedoc and Provence, where there is a great conſumption of oil amongſt people of every claſs, there are no bad effects ſeen to ariſe from it.

(*d*) This ought rather to be ſaid of goats milk, which ought in this reſpect to be placed after cows milk, as being leſs ſweet and fluid, ſo as not to be eaſy of ſeparation, and never ſpontaneouſly throwing out a cream, as is the caſe with the other milks.

out the thickeſt and the firmeſt cream: this ſeems to be the reaſon why cheeſe prepared from the thinneſt milk is commonly the firmeſt.

Rouſſeau ſays it is a ſolly to fear any ill effects from the milk's curdling in the ſtomach. He is right in this, becauſe it is a natural and conſtant effect. The milk that children throw off their ſtomachs by vomit, is conſtantly in this ſtate; the excrements of young animals could not have a firm conſiſtence, if the milk they take did not coagulate. It may be argued from this, that milk is not adopted to every ſtomach, but not that it is unhealthy becauſe it curdles.

An Engliſh phyſician ſtarted this objection long before Rouſſeau: he was anſwered, that it was a known fact, that many perſons had been attacked with conſiderable pain, and even convulſions and death, from taking ſome acid ſubſtances after milk, and that on this account the coagulation of milk in the ſtomach was unwholeſome. Another Engliſh writer obſerves, that cows milk becomes ſour and coagulates ſpontaneouſly after ſtanding only twelve hours when the weather is hot, and that of courſe it cannot be denied but that milk naturally curdles in the ſtomach, but that in general no ill effects reſult from this: the colics, and green ſtools, which are ſo frequent in children, ariſing wholly from ſome defect of the bile, which is known to have ſo much influence on digeſtion, the moment the aliment paſſes into the inteſtines. The concluſion of this laſt writer is, however, by no means complete.

The green colour of the ſtools is indeed owing to a particular ſtate of the bile. But to what cauſe are we to aſcribe the latter? Signior Zeviani, an ingenious Italian tells us that chymical experiments prove the fœces to become of a green colour, by the acidity and corroſiveneſs they acquire in their paſſage through the inteſtines, and that by theſe means the bile becomes as green as when we mix it with the nitrous acid. This effect is therefore to be explained by the aceſcency of the milk.

It is of importance to be known, that milk, altho' it be more eaſy of digeſtion than any other aliment, is likewiſe the moſt hurtful, when imperfectly or not at all digeſted. Infants never vomit milk when their ſtomachs are able to digeſt it.

Boerhaave blamed the conduct of women who boil the milk they intend for their children, in order to correct an imaginary crudity. He tells us, that milk is ſpoiled by boiling, becauſe the heat throws off its moſt wholeſome and fluid parts, and he therefore recommends it to be given with bread without being boiled (*e*). A phyſician who ſhould de-

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(*e*) Many writers have ſuppoſed a ſpir. rector. in milk which evaporates by boiling, but this is perhaps mere y imaginary or of little conſequence. Boiled milk is found to yield more fœces than raw milk. Dr. Cullen aſcribes this to the milk's being deliver ſuch a doctrine in Switzerland, would perhaps be in danger of his life, from the rage of ſome good women.

Indigeſted milk leaves a hard cheeſy ſubſtance, which nature is unable to aſſimilate, and hence ariſe colics, cardialgia, convulſions, and even death. In other circumſtances, the inteſtines become diſtended with flatus, ſo as to render the abdomen extremely hard; the glands of the meſentery become obſtructed, the foeces paſs through without affording any nutritious matter, and the patients die from inanition.

Boerhaave ſought for the cauſe of theſe ill effects in the inactivity of the bile, which from a want of due energy is unable to reſolve this hard and cheeſy matter. It is well known how much they who have weak ſtomachs, and above all hypochondriacal and hyſterical patients, are liable to ſuffer from a milk diet, altho' ſome of them do indeed adopt it with impunity: It was on this account that profeſſor Winter of Leyden thought a milk diet was improper for gouty people, if they have naturally weak ſtomachs, or are of a very irritable habit, ſubject to

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being thoroughly blended by the heat, it being well known that milk kept for ſome time expoſed to the air, has advanced ſo far towards a ſpontaneous ſeparation. Again, when milk is boiled, a conſiderable quantity of air is detached, as appears from the froth on the ſurface, and air is the chief inſtrument of fermentation in bodies, ſo that after this proceſs it is leſs liable to aceſcency.

ſpaſmodic aceſceny; becauſe the aceſcency of the milk will in theſe be likely to produce the worſt effects.

The effects of indigeſted pap are no leſs fatal to children. I am aware that pap conſtitutes the principal aliment of millions of children, and I am at the ſame time ſenſible that an infinite number of them are carried off by it. I have already ſaid this; hence ariſe the vomiting; inceſſant colic; diarrhoea; frothy, grey, yellow, green, or dark coloured ſtools; ſwelled belly; worms; the frequent cardialgia; and the convulſive affections which ſometimes carry off children before my eyes; together with all the other ſymtoms which the phyſicians of every country ſee and deſcribe, and in vain attempt to prevent or cure, becauſe in this they have to encounter with the obſtinacy and prejudices of all the old women. It would be leſs difficult to tranſport the Alps into the vaſt plains of Aſia, than it would be to convince theſe good ladies of their error.

I have ſeen all theſe accidents; ſometimes ſeparately, and ſometimes combined together in conſiderable numbers, and I have conſtantly traced them to the ſame ſource. I have in many caſes relieved children from theſe complaints, and they would indeed wholly diſappear, if parents would liſten to reaſon and the advice of thoſe who have no other view than to do good. They ought to reflect that prejudices in a matter of this ſort are criminal, and that they are accountable for them to the ſupreme Being, and to ſociety. A little weak broth, or bread and milk, would be ſree from all theſe dangers. But it is to no purpoſe that we adviſe. The prejudice that prevails in Switzerland and other countries on this ſubject, is the reaſon why the rickets is ſo prevalent amongſt children. This diſeaſe (*a*) which firſt appeared in England about the middle of the 16th century, is attended with conſiderable appetite. The children, who are afflicted with it, eat much, but at the ſame time loſe their fleſh : their belly is generally hard and tumid : their limbs and trunk gradually become bent and unable to ſupport them, whilſt their head and abdomen, and ſome other particular parts increaſe conſiderably in volume. Children are very rarely attacked with this complaint before the ſixth month, tho' I have ſometimes ſeen it happen before that age, in Switzerland. In general it makes its appearance in children of two or three years of age, and if it be not well cured, as is too often the caſe, it leaves behind it glandular obſtructions which very often terminate fatally.

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(*a*) Foreign writers, ſpeaking of this diſeaſe, frequently give it the name of *Morbus Anglicus*, or the Engliſh diſeaſe; and this is the caſe with Dr. Z. from a ſuppoſition that it is of Engliſh origin. They have indeed for this opinion the authority of our countryman, Gliſſon, who in his famous work *de rachitide* ſays, " Innotuit autem primum hic morbus (quantum quidem ex aliorem relatione, diligenti facto examine, colligere patuimus) Angliæ tractibus, in comitatu ſcilicet Dorſet et Somerſet, triginta circiter abhinc annis". Pag. 3. edit. Lond. 1666. There can be no doubt however, but that this is a diſorder common to many countries, and of a very antient date. It ſeems indeed to be very clearly deſcribed by Hippocrates in the 2d chapter of his book *de Articulis*.

Dr. Zeviani, an ingenious phyſician at Verona, publiſhed not long ago, an ingenious work on this diſeaſe, which is by no means unfrequent in Italy. His obſervations agree entirely with ours. He conſiders it as a diſorder in which all the parts of the body are affected by a peculiar acrimony, which he aſcribes to the corruption of the milk with which children are fed. He is of opinion that this, when in a leſs degree, is the ſource of other infantile diſeaſes; and of the rickets when in its higheſt degree. I agree with Zeviani in the fundamental part of his argument; but I confeſs myſelf to be of opinion, that the abſurd uſe of pap brings on this diſeaſe much ſooner than milk (*b*).

Vandermonde, was likewiſe of opinion, that pap was a very unhealthy food for infants. " This in-

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(*b*) This is ſurely not the only remote cauſe to be ſought for in this diſeaſe, which is known to occur chiefly in moiſt and unhealthy ſituations, and very often from the negligence of nurſes in not exerciſing their children ſufficiently. It is frequently the conſequence of other diſeaſes; ſuch as the ſmall-pox, meaſles, and above all of intermittents. Sydenham having remarked that excepting thoſe years in which autumnal intermittents were predominant, the rickets rarely occurred. Dentition and morbid irritability may likewiſe have a ſhare in determining the complaint; nor ſhould the age, diſeaſes and mode of life of the parents be forgotten; all theſe circumſtances, together with many others which might be mentioned, prove that Dr. Z. Zeviani, and others, are not ſufficiently authorized in their opinion of its being ſolely occaſioned by a particular mode of diet.

" digeſtible mixture", ſays he, " of milk and flour " which has not fermented, forms a maſs in the " ſtomach which undergoes no other change than " what leads it back to its original aceſcency". The reader will do well to conſult him on this ſubject. Plutarch tells us, that the Spartans fed their children very ſparingly, that they might grow the more.

The Swiſs eat but little butter, in compariſon with what is conſumed in Holland and England. It is never introduced at table. In Lower Saxony, and Brandenburgh, where, by way of ſupper, people content themſelves with bread and butter (of which, by the bye, they are as fond as the Engliſh are of their punch) and they often experience the ill effects of this, as their butter is ſalted, and very often rancid. This occaſions heart burn, and a diſagreeable taſte in the mouth. It is certain that butter, and eſpecially fried butter, may occaſion many inconveniences.

Butter, which is the more oily part of the milk coagulated by an acid principle, is extremely liable to acidity and rancidity; and as butter becomes ſo ſpontaneouſly, it will be eaſy to conceive how much ſooner it will do this in the ſtomach. In many ſubjects it excites nauſea, painful cardialgia, and even vomiting. Like oil it relaxes the ſolids when taken in conſiderable quantity. Notwithſtanding this, however, good freſh butter may be uſeful, taken in the morning, and drinking with it ſome light wine. It can then do no harm, except by its quantity, or by the bad ſtate of the ſtomach of thoſe who take it (*c*).

There is leſs conſumption of cheeſe in Switzerland, than in Germany, or Holland. I have often ſmiled when they ſpoke to me, at ſome of the German tables, of cheeſe, as a ſubject which was not beyond the ſphere of a Swiſs. We have two ſorts of cheeſe, hard and ſoft: of theſe the former ſeems to be the moſt wholeſome. It increaſes the appetite; but when uſed too liberally, occaſions cardialgia and even prevents ſleep. The green cheeſe, which we call *ſchabzeieger*, is the ſtrongeſt cheeſe of this ſort, and is likewiſe the moſt hurtful, The ſoft cheeſes are the moſt ſavory, but they load the primæ viæ with an indigeſtible and inſoluble matter, and hence ariſe many inconveniences. All our hard drinkers, and likewiſe the idle and lazy amongſt our lower claſs of people, eat great quantities of this cheeſe: on hearing them ſpeak, one would think they have always a morſel of cheeſe in their throats, which does not ill agree with our guttural accent. There are even ſome of our better ſort of people who prefer this cheeſe, eſpecially when it is rotten. This partakes indeed too much of the Swiſs, but we know that the Romans were fond of aſafœtida, and that the Indians of theſe days conſider it as a delicacy.

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(*c*) Dr. Cullen, ſpeaking of butter, is aware of the diſorders it may produce in the primæ viæ, by its rancidity; but he thinks we ought to prefer good freſh butter to the imported oils, which by not being freſh, have always ſome degree of rancidity.

The nothern nations, eſpecially thoſe which are neareſt to the pole, feed much on animal diet. The Japaneſe eat no quadrupeds, but live chiefly on water fowl. They uſe no milk; nevertheleſs, the Whale, even to its inteſtines, affords them a delicious repaſt. Nor are they ſparing in their uſe of other fiſh: on this account they are often in ſuch extreme want of proviſions, that the lower claſs of people are obliged to content themſelves with ſea plants, and even poiſonous herbs, the effects of which they counteract by their manner of preparing them.

The Egyptians are ſtill more reſerved in their uſe of meat. Some of them eat poultry, but their more common food is milk, and all their meals are very ſimple. The ſame ſobriety is found to prevail throughout China and India, where meat is very ſparingly uſed.

The Chineſe phyſicians commonly recommend abſtinence to the ſick; in fevers they will not even allow the patient to eat either meat or fiſh or eggs. Their permiſſion extends only to rice water, or to rice with a conſiderable proportion of water, and even of this they are very ſparing. They obſerve that the ſtomach can never perform its functions while the body is ailing, and that aliment, tho' it be taken in little quantity, will of courſe be ill digeſted. The ſame opinions and practice prevail throughout the whole of the Eaſt-Indies, and in Japan. Theſe oriental phyſicians evince more wiſdom in this matter, than thoſe amongſt us, who ſacrifice to the inclinations and appetite of people of faſhion, with a ſervile complaiſance, and very often allow the uſe of meat when every circumſtance of the caſe forbids it.

Meat of every kind certainly diſpoſes our humours to alkaleſcency. Animal food ſometimes putrifies very ſoon after it is taken into the ſtomach. The impreſſion which is made by fire on meat, concentrates its ſavoury principle, and exalts its ſalt and oil more or leſs, in proportion, as the fire is more or leſs active. Meat fried in butter or oil diſpoſes it the more ſpeedily to putrefaction, as the boiling point of oil is known to be 600, whereas water boils at 212, and therefore a greater degree of fire will be required to prepare meat in this manner.

But of all meats, *(d)* pork ſeems to be the moſt alkaleſcent. The filth on which our hogs commonly feed, affords only depraved juices, and experience proves to us, that theſe of all animals are the moſt ſubject to diſorders of the lungs and ſkin This is the reaſon why in all well governed places the hogs are directed to be killed. Birds which live wholly on inſects and which are eſteemed ſo deli-

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*(d)* This is by no means certain. It is a very ſucculent and nutritious food, and was therefore given to the *Athletæ*. Both the Jews and Mahometans do indeed forbid the uſe of pork, which in warm countries is ſaid to increaſe the leproſy ; but of this we have no ſatisfactory proof, and neither the ancient Greek phyſicians, nor the Romans with whom this meat was held in high eſtimation, ſeem to have complained of any bad effects from it.

cious to the rich, *irritamanta gulæ*, are ſtill more alkaleſcent. Partridges poſſeſs this quality in ſo high a degree, that it is impoſſible to feed on them three days together without falling ſick. Meat, which becomes putrid in the ſtomach, occaſions conſiderable flatus; and the ſame thing happens likewiſe from indigeſtion. It will therefore be uſeful to know whether they who have naturally a weak ſtomach ſuffer moſt from vegetable or animal food.

I make a conſiderable difference between different meats. Thus the white meat of poultry and veal ſeems in general to be the moſt eaſy of digeſtion. The meat of young animals is more eaſily digeſted than that of old (*e*). Beef, pork, black game, and wild fowl in general, are difficult of digeſtion; and ſo is fat meat. The fleſh of the wild boar is more eaſy of digeſtion than pork, and this becauſe that animal feeds chiefly (*f*) on acorns. Beef, of all other meats, ſeems to be the leaſt ſoluble when it is eaten too late: it therefore does harm, not becauſe it becomes

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(*e*) This opinion, tho' pretty generally received, does not ſeem to be well founded. The meat of young animals being more difficult of digeſtion, than that of old; and this, from its being more viſcid and gelatinous. Dr. Bryan Robinſon relates a remarkable caſe, which tends to prove this, of a perſon who accuſtomed himſelf to puke in the evening, and who uſed to throw up veal indigeſted, tho' of beef there were ſeldom any remains.

(*f*) Or rather becauſe it is more exerciſed, and is of a firmer and leſs gelatinous texture than the domeſtic hog.

comes putrid in the ſtomach, which I have never experienced, but becauſe it ſeems to load it (*g*).

Shebbeare, ſeems to go too far, when he aſſerts that animal food is more natural and analogous to us than vegetable; and that it is likewiſe more eaſy of digeſtion. Zeviani does better in adviſing a mixture of animal and vegetable ſubſtances in caſes of hypochondriacal flatulency; becauſe it is not yet determined which of the two are the moſt flatulent. I know many people who have been exceedingly affected in this way from the uſe of vegetables, altho' they felt no ſuch inconvenience from veal, wild fowl, poultry, veniſon, wild boar, or hams, or ſauſages. Beef, gooſe, or duck, or hare, occaſioned indeed conſiderable flatus, but by no means ſo much as was the effect of vegetable food.

From the preceding reflections I believe we may venture to conclude, that meat of every ſort will occaſion flatus, when it is ſo alkaleſcent as to putrify in the ſtomach; but that this does not happen in every ſtomach, and that animal food when well choſen is therefore leſs flatulent than vegetable food. Vegetable food, however, is leſs ſtimulating when carried into the blood than animal food, its bad effects, when it produces ſuch, ſeem wholly to be confined to the primæ viæ, and it will therefore be preferable to animal food, when ever we aim at remov-

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(*g*) This is perhaps not quite ſo applicable to this country, where beef ſeems to be in the greateſt perfection, and much more ſoluble than it is in many other parts of Europe.

ing and diſpoſition to fever. I have often on ſuch occaſions experienced the good effects of baked apples freed from their rinds.

There prevails a very abſurd and dangerous prejudice with reſpect to the jelly of meat. This prejudice ſeems to be kept up by many of thoſe phyſicians who practice by rote, and who are too often the ſupporters of popular errors. They force, as it were, patients who have weak ſtomachs, and particularly thoſe who are exhauſted, to ſwallow jellies, which are procured in greater quantity from veal than from beef; from mutton almoſt in the ſame proportion as from veal, but in leſs quantity from poultry. Be upon your guard, ſays Boerhaave, againſt jellies, if you have to do with a weak ſtomach, for they digeſt only with the moſt robuſt people, and in weaker ſtomachs become truly glutinous and inſoluble. It is a miſtaken notion, adds that great man, to ſuppoſe theſe preparations to be the more nutritious becauſe they are without any additional mixture: it being certain that by dilution with ten times their quantity of water they would be rendered more ſoluble to a weak ſtomach.*

Fiſhes in general ſeem to be leſs alkaleſcent than meat, for we are not to attribute to them, effects which are due only to the ſuperfluous ſpicery with which they are ſeaſoned. Healthy fiſh ſeems never to produce theſe effects. There are many weak ſtomachs which tho' unable to take in meat, digeſt ſea fiſh, and even freſh water fiſh, without any inconvenience. The ſalmon which aſcends our rivers to ſpawn, frequently excite a cramp in the ſtomach, which is eaſily relieved by vomiting. At theſe times the ſalmon appear to be relaxed and ſickly, and when they have ſpawned become covered with puſtules. This ſeems to have been the reaſon why the Dutch, who eat of them formerly, were afflicted with leproſy; and why the Egyptians are ſubject to elephantiaſis by feeding on the putrid fiſhes of the Nile, and of ſome ſtagnant waters.

The conſtant uſe of fiſh, joined to the great conſumption of other mucilaginous aliment, and cheeſe, ſeems to be the cauſe of the frequency of chronic diſeaſes and of the ſtone amongſt the Dutch.

The Icelanders drink the oil of fiſh in conſiderable quantity, and this from its great rancidity, and the alkalaſcency it occaſions in the blood veſſels, ſeems to prove why the ſmall-pox, when introduced there from Denmark, was ſo fatal, that the patients commonly died on the third day. I am not certain whether from the great number of children obſerved on the ſea coaſt, and near great rivers, we do right to conclude that a fiſh diet contributes to population. The obſervation of Monteſquieu on this ſubject is at leaſt very ingenious, when he tells us that the regimen of certain monks ſeems to be wholly repugnant to the intentions of their founders.

It is eaſy to conceive from the ſenſible qualities of the ſpices, that nature never intended them to be uſed in the proportion generally adopted by us at preſent. It is in Europe that the greateſt exceſſes are committed in this reſpect: it is well known how much they diſpoſe to gout, indigeſtion and a long train of other ills. We are told that in India the exceſſive uſe of candid nutmegs occaſions lethargy. It has been very well ſaid, that the beſt quality of ſpices is to ſtimulate the appetite; and their worſt, to deſtroy by inſenſible degrees the tone of the inteſtines.

Sugar ſeems to have become one of the moſt neceſſary articles of our food. It was pretended that ſugar generated pituita and thickened the fluids, but Boerhave aſcribes to it a very attenuating and even ſaponaceous quality. He informs us, however, at the ſame time, that by diſſolving too much of our oil, it thins and relaxes us. We are therefore not to be ſurprized at Fracaſſini's including ſugar amongſt the cauſes of hypochondriacal affection. Linnæus tells us, however, that he has ſeen people attain a very advanced life who had accuſtomed themſelves to a liberal uſe of ſugar.

The veſſels uſed in the preparation of our food may likewiſe become noxious to health. The reader will conceive perhaps that we are alluding to copper veſſels, becauſe copper is conſidered as a true poiſon, which even water is able to attack; and becauſe we have often been told that aliment prepared in untinned copper veſſels had excited the moſt horrible vomitings, and that copper in a very minute doſe is a powerful emetic. There appeared not long ago in the Gazettes an article from Mecklenburgh, in which was ſaid, "within theſe few days "we had a convincing proof of the bad effects of "copper which have been ſo often experienced from

" the uſe of untinned copper veſſels in cookery. " A farmer came from Groſſenluken to Guſtrow " market with a quantity of ſour cheeſe, which he " ſold. All thoſe who ate of theſe cheeſes were " attacked with vomitings, convulſions and other " alarming ſymptoms. Dr. Brun, of Guſtrow, to " whom ſome of theſe cheeſes were ſent, aſcribed " all theſe effects to the copper veſſels, in which they " had been made. In conſequence of this report " the magiſtrates have proſcribed the uſe of copper " veſſels, in the preparation of cheeſe or any other " aliment from milk." Now I wiſh to aſk, with all the reſpect due to the probity of this cheeſe merchant, and to the ingenuity of the Guſtrow phyſician, whether all theſe accidents might not be referred wholly to the cheeſe itſelf. M. Eller has proved to the academy at Berlin, that the uſe of copper veſſels is far leſs dangerous than it is commonly ſuppoſed to be.

The moſt experienced chymiſts, ſays M. Eller, have never been able to diſcover any noxious quality in copper when freed from every heterogeneous matter. The corroſive and dangerous properties of metalic ſubſtances take place only when they are in a ſaline or vitriolic ſtate. Well water, after boiling two hours in a copper veſſel, afforded no marks of copper either to the taſte or when examined chymically. Nor did beer, milk, ſalted beef, cabbages, carrots, lard, pears or apples, boiled in the ſame veſſel, afford any appearance of copper, either by evaporation or calcination or extraction.

Vegetables which yield a kind of volatile alkali, ſuch as onions, garlic, horſe radiſh, when boiled with meat in copper veſſels appeared to be equally free from any metallic taint. M. Eller made ſimilar experiments with elder root boiled in copper veſſels, and alſo with coffee. But neither theſe, nor pure water that had remained all night in a copper veſſel, nor water that had been boiled in it and then ſuffered to cool, nor broth prepared in it from ſeveveral pounds of beef, afforded the leaſt particle of copper. Water to which a little common ſalt, had been added, did indeed diſſolve a few grains of the metal, but this was not the caſe when the ſalt by being mixed with other ſubſtances, was able to act on theſe inſtead of the copper.

It is therefore the opinion of this ingenious writer, that food prepared in copper veſſels becomes noxious, and will excite vomiting, &c. only when wine or vinegar, or lemon juice, or any other acid are mixed with the aliment; or when meat or vegetables, are ſuffered to remain too long time in ſuch veſſels expoſed to a moiſt air, which will act on the ſurface of the metal and form a verdigreaſe. ( *h* )

**M.**

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( *h* ) Dr. Falconer in a little work lately publiſhed by him on the poiſon of copper, has given many uſeful obſervations and experiments on this ſubject. It is obſervable that vinegar is extremely liable to acquire a noxious impregnation from braſs or copper in the preparation of pickles, in many of which a fine blue or green colour is reckoned a teſt of ſuperior goodneſs; this

M. Margraaff has very accurately examined many kinds of tin, and in all of them he diſcovered a conſiderable portion of Arſenic, which would lead us to ſuſpect the wholeſomeneſs of tin veſſels. It will appear from hence how dangerous it may be to ſuffer any acid ſubſtance to remain long in them. Altho' we are ſpeaking here only of veſſels uſed in cookery, yet I cannot avoid quoting a curious fact related by Baron Van Swieten, who tells us that all the ſervants of a family were attacked with the colic of lead, from keeping the water they drank, in a large leaden veſſel (*i*). Dr. Schinz, a phyſician at Zurich, is employed in experiments to determine the noxious effects of metallic veſſels of every ſort, uſed in cookery.

Hitherto I have contented myſelf with pointing out how the general qualities of our aliment may be conſidered as the remote cauſes of diſeaſes : there remains now to be determined how they may prove noxious by being taken in too large or too ſmall a quantity, or by being improperly mixed.

Too much food is prejudicial to the body, and particularly to the mind. Continued voracity renders us ſtupid. Temperance conſtantly adds to the

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this quality being often intentionally heightened by nice houſewives, by throwing in a few halfpence. Dr. Falconer quotes ſeveral modern books of cookery, in which a braſs, bell-metal, or copper pan is particularly directed to be uſed whenever a fine green colour is required.

(*i*) Sir George Baker's obſervations on the poiſon of lead, did not appear till after this work was written.

activity and energy of the mind. The ancient Egyptian phyſicians derived all diſeaſes from the aliment; and their preſcriptions in diſeaſes were therefore chiefly confined to vomits, purgatives, and abſtinence. The beſt way to preſerve health is to eat even leſs than we are able to digeſt.

Cheyne has very well ſaid that we muſt preſerve our ſtomachs clean if we wiſh to keep our head clear: a boy who was found in a foreſt, poſſeſſed ſo acute a ſenſe of ſmell, from the ſimplicity of his diet, that he was able to diſtinguiſh by it ſalutary plants from thoſe which had bad qualities. But this delicacy ſoon wore off when he came to live like other men. A certain blind man is ſaid to have diſtinguiſhed colours by the touch, but he could do this only when his ſtomach was empty. Pythagoras ate and drank with great moderation with a view to elevate the faculties of his mind. Carneades previous to his diſpute with Chryſippus is ſaid to have purged himſelf with hellebore, to clear his brain and increaſe the force of his imagination. It is related of Protogenes that during the ſeven years he was employed on the picture of Jalyſus, his food conſiſted wholly of lupines and a little water. He was of opinion that this light and ſimple nouriſhment would leave him the freedom and delicacy of imagination.

We are told by Philo, that the Therapeutiſts were not permitted to eat before the ſun went down, and that they did this from an opinion that as the ſearch after wiſdom ought to be the employment of the day, the care of the body ſhould be deferred till night. We are told that many perſons of this ſect abſtained many days together from every kind of food, and lived, ſays Philo, in this manner, chaunting their hymns like the graſhopper that feeds on the dew. Amidſt all this enthuſiaſm we diſcover ſomething reaſonable in their notions; for we find them avoiding the exceſſes of the table, which are the greateſt corrupters both of the body and mind. Wine, ſaid they, deſtroys the reaſon, and high ſeaſoned diſhes ſerve only to ſtimulate our concupiſcence.

Mr. Law the famous financier in his younger days uſed to eat only a little bit of chicken once a day, that he might be the more ſucceſsful at play. Newton was ſatisfied with a little biſcuit and a glaſs of canary, whilſt he was compoſing his celebrated treatiſe on colours: this is the reaſon why Boerhaave tells us he was always ſurprized at reading or being told that philoſophers fancy all their ideas to depend on themſelves, when food is known to extinguiſh as it were, the powers of the mind; and when mathematicians, who before they place themſelves at table, would reſolve the moſt difficult problem, riſe from a great repaſt ſtupid and inactive.

He who finds himſelf lazy and ſleepy ſoon after a meal may be aſſured that he has ate and drank too much. Too great a quantity of aliment impedes digeſtion. It expands and corrupts in the ſtomach, and if not thrown up by a vomit, as was the cuſtom of the Romans, towards the decline of their empire, will excite head ach, colic, or what is well known in England by the name of ſurfeit, and ſometimes even death, as was the caſe with La Metrie, who died after eating enormouſly of a paſty at lord Tyrconnel's. People who eat much, have uſually their face ſwelled and red, and their eyes prominent, together with a ſenſe of drowſineſs after a full meal: hence it happens, ſays Van Swieten, that intemperate people die ſuddenly of apoplexy.

Perſons of a delicate habit feel anxiety, depreſſion of ſpirits, and a weight at the ſtomach, when ever they exceed their uſual quantity at a meal; at night they experience all the effects of indigeſtion, ſuch as flatulency, diſturbed ſleep, wandering pains, uneaſy dreams, incubus, ſenſe of ſuffocation, and a variety of nervous affections, which even approach nearly to apoplexy, and which are to be relieved only by emptying the ſtomach, and re-eſtabliſhing its digeſtive faculty. Sir Charles Scarborough therefore did well to ſay to the dutcheſs of Portſmouth, "You muſt either eat leſs, or uſe more exerciſe, or "take phyſic, or be ſick."

Almoſt all diſorders begin by a bad digeſtion, and yet we ſee phyſicians, even in caſes of hypochondriacal, or hyſterical affection, deriving the indications of cure from an imaginary ſtate of the air; whereas their attention ſhould be directed to the ſtate of the ſtomach and inteſtines; becauſe this muſt be corrected and re-eſtabliſhed if we wiſh to cure theſe and a variety of other chronic diſeaſes.

Men of letters, and in general all who lead a ſedentary life, think they may eat as much as thoſe who take much exerciſe. They may indeed eat with as much appetite, but they will digeſt their food much more imperfectly than theſe. So that the greater appetite, literary people enjoy, the more carefully ought they to cultivate temperance in eating; becauſe without this, their flatulency, and the evils that attend it, will every day increaſe, in ſpite of all the drugs they may take to remove it, and which will only ſerve to increaſe their complaints. This is the ſource of the melancholy, which is ſo common to men of letters, and which is exceedingly increaſed if they live in a damp air, and feed much on food that is difficult of digeſtion.

It has been the opinion of many practical phyſicians, that a morbid matter in the primæ viæ is a very general cauſe of fever, and hence the great uſe of emetics in the beginning of many kinds of fever (*k*). This cauſe ought to be more particularly attended to in children.

Too great a degree of abſtinence will likewiſe tend to weaken and diſtreſs the faculties both of the body and mind. Men who in the earlier ages from a miſtaken notion of religion, confined their diet to a few figs or a cruſt of bread and a little water, were

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(*k*) A late writer, Dr. Lyſſons, has ſupported this doctrine in an eſſay on the effects of camphor and calomel. But the morbid ſtate of the primæ viæ is perhaps more commonly an effect than a cauſe of fever, and where it primarily exiſts, does perhaps in the greater number of caſes only concur with other remote cauſes to excite the diſeaſe.

ſo many gloomy and viſionary enthuſiaſts: and I have no doubt, but that the exceſſive abſtinence to which the Carthuſians and ſome other religious orders are ſubjected, is one of the great ſources of modern ſuperſtition.

The abſurd mixture of aliments, which is ſo univerſally prevalent in theſe times, is extremely repugnant to nature, and of courſe, noxious. Our modern cooks, who have the talent of combining together things the moſt oppoſite in nature, deal out at the ſame time poiſon with their diſhes, and thus ſhorten the period of human life. The nervous ſymptoms which are now ſo frequent, eſpecially amongſt people of faſhion, are to be referred in a great meaſure to the luxury of their tables. It is by no means wonderful, that ſuch a mode of life ſhould change the order of nature, and produce new and fatal ſymptoms, or rather diſeaſes, that were wholly unknown to the ancients. As in Germany, ſo at every feaſt formerly in France, it was the cuſtom to reckon how many of the company were drunk; and this was done, to prove, that the maſter had been liberal of his wine. It will perhaps ſoon become the faſhion to reckon how many have been ſuffocated on theſe occaſions, as a proof of their having ate plentifully. I know no civility ſo ill placed as the forcing our friends to cram themſelves with a variety of diſhes. What can be more abſurd, and at the ſame time more prejudicial to health, than to ſee people loading their ſtomachs with ſuch a contradictory variety of acids, ſpices, meats, cream, ice, paſtry, and wine; together with fruit of every ſort, coffee and cordials, and an almoſt endleſs catalogue of other luxuries which are ſerved up at every entertainment. What ſort of chyle or what degree of wholeſome nouriſhment can be expected from ſo unnatural a mixture. Every day's obſervation ſerves to prove that the great and opulent who live in this manner, ſeldom attain to old age: or if they do, it is to linger in advanced life, with ſickneſs and infirmities which they very often entail on their poſterity.

## CHAP. VII.

### *Of Drink, conſidered as remote cauſes of diſeaſes.*

WATER would ſeem to be the drink intended by nature for man. Fermented liquors are due rather to the induſtry of mankind than to nature. There are certain determinate qualities which conſtitute good water. It ſhould be light, ſoft, tranſparent, and perfectly inſipid (*l*).

The Greeks and Romans conſidered water as an univerſal medicine. Boerhaave tells us, that water cleanſes and ſtrengthens the primæ viæ, and that it keeps off acute diſeaſes, and is the beſt remedy for thin perſons, or thoſe who have too much bile or any peculiar acrimony. Water does not extinguiſh

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(*l*) Celſus expreſſes himſelf with great elegance on the properties of different waters. " *Aqua leviſſima pluviatilis eſt ; deinde fontana, tum ex flumine, tum ex puteo ; poſt hæc ex nive aut glacie ; gravior his ex lacu, graviſſima ex palude. Facilis etiam et neceſſaria cognitio eſt naturam ejus requirentibus. Nam levis pondere apparet, et ex his quæ pondere pare ſunt, et melior quoque eſt, quo celerius et calefit et frigeſcit, quoque celerius ex ea legumina percoquuntur.* Lib. ii. cap. 18.

the fire of genius. Demoſthenes is ſaid to have drank only water. It would ſeem too as if Cæſar had confined himſelf to this liquor; Cato ſpeaking of him as the only one who had been able to overturn the republic by his ſobriety. Tiraqueau drank only water, and yet he was the father of forty children, and publiſhed as many works.

There are many ſorts of waters, ſome of which are extremely hurtful to health. Rain water would ſeem preferable by reaſon of its levity, but it is eaſily diſpoſed to putrefaction, becauſe it waſhes down many floating volatile particles, and the ovula of different animalculæ with which the air abounds. Rain water becomes much more unwholeſome when it has ſtagnated any length of time in ciſterns. In Holland and other countries where there is a deficiency of every other kind of water, they in ſome meaſure remedy the inconvenience of this by boiling it; but by drinking it warm and in abundance, it occaſions many ill effects (*m*).

The water of rivers is not always healthy, becauſe they carry with them a great deal of filth, and other impurities; this is particularly obſerved of the Seine, the Ganges, the Nile, &c. Spring water conſtantly partakes of the nature of the ſoil from which it flows, and

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(*m*) Rain water will be more wholeſome when collected at a diſtance from large towns, the atmoſphere of which is commonly very impure. M. Margraaff, of the Berlin academy, made many ingenious experiments on rain water, which he found to con-

and in general is hard and heavy. This will commonly be the caſe when it flows through marle or clay, or ſtrata of minerals. The lighteſt and the pureſt ſpring water is found to flow through a light ſandy ground. Well water has the ſame properties as ſpring water, and is found ſometimes to occaſion calculous concretions, as is the caſe with thoſe waters which flow from rocks. Theſe will be likely to produce bad effects if drank without being boiled and ſuffered to repoſe till they have depoſited a ſediment (*n*). There can be no doubt but that if hard water meets with a viſcid mucus in the urinary paſſages, it may lay the foundation of calculus. This ſeems to be the reaſon why the ſtone is ſo frequent in certain provinces. There are ſome happy conſtitutions however on which theſe bad qualities of water make no impreſſion.

The moſt inſalubrious of all waters is that of marſhes and ſtagnant pools. All good obſervers, from Hippocrates downwards, have pointed out the unwholeſome nature of ſtagnant water. The

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contain a great variety of adventitious matter. He likewiſe obſerved a great tendency to putrefaction from the green weed which riſes on its ſurface, and a mucilaginous ſubſtance which grows copiouſly on it. Boerhaave who long before this had obſerved this mucilaginous ſubſtance, compares it, when viewed through a microſcope, to a grove of muſhrooms. Hippocrates recommends rain water in preference to all others, but cautions us at the ſame time to boil or ſtrain it, otherwiſe, ſays he, it will have an ill ſmell and excite hoarſeneſs.

(*n*) I have myſelf experienced the good effects of this method at Paris, where the water that is in common uſe ſeldom fails to affect new comers, unleſs boiled before it is drank.

Daniſh miſſionaries tell us, that the elephantiaſis, which is ſo frequent in the iſland of St. Thomas, is chiefly occaſioned by the badneſs of the water uſed for common drink (*o*).

Snow water is conſidered as the cauſe of the bronchocele, a diſorder which is very frequent in the neighbourhood of the Alps. Theſe ſwellings are very rare in Tyrol, whereas in the villages of Piedmont they are ſo common and natural as to be conſidered as an ornament. In Switzerland we meet with bronchocele in the low lands. It is well known that the pureſt water is procured on the mountains (*p*).

Wine

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(*o*) The leproſy is found to be a very common complaint in almoſt all the new diſcovered iſlands in the South Sea. "This "diſorder," ſays Mr. George Forſter, "is more frequent in "the iſlands which were viſited by Taſman, than at Taheitee, "from there being only putrid ſtagnant water in a few dirty "pools." Alpini, informs us, that the elephantiaſis is endemical in Egypt. Galen aſcribed it to the impure waters of the Nile, and Lucretius in the following lines ſeems to have adopted the ſame opinion.

*Eſt Elephas Morbus, qui propter flumina Nili,*
*Gignitur Ægypto in Medio.*

(*p*) The cauſe of bronchocele has been aſcribed by almoſt all authors to the uſe of ſnow water, though ſeemingly without reaſon. An ingenious French writer who practiſed in the neighbourhood of the Alps, obſerves that bronchocele is not more common there, than it is in many other provinces of France, and that Geneva is the only ſituation near thoſe mountains where Juvenal's imputation is juſtified; and he is of opinion that the cauſe of theſe ſwellings is not to be looked for in the uſe of ſnow water, becauſe the

Wine, when immoderately uſed, is to young people what manure is to vegetation, which haſtens the progreſs of the fruit, but deſtroys the plant. Wine uſed in early life is a poiſon. It undermines all the principles of man, exhauſts his powers, deſtroys the faculties of his mind, and excites vomitings, fevers, phrenzy, madneſs, convulſions, apoplexy, and

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the water from the Alps is filtered through beds of earth and gravel before it reaches the lake of Geneva; and he therefore aſcribes it to the Genevan manner of living. The trials of captain Cook in his voyage round the world, prove the wholeſomeneſs of frozen water beyond a doubt. This gentleman in the high ſouthern latitudes found a ſalutary ſupply of freſh water in the ice of the ſea. "This melted ice," ſays Sir John Pringle, in his ingenious diſcourſe on the means of preſerving the health of mariners, "was not only ſweet but ſoft, and ſo wholeſome as to ſhew "the fallacy of human reaſoning unſupported by experi-"ments. An ancient of great authority had aſſigned, "from theory, bad qualities to melted ſnow, and from "that period to theſe times, this prejudice had not been "quite removed." It is obſervable that bronchocele occurs in many countries of Europe where hard calcareous waters are much drank. This diſorder is not uncommon at Rheims, where the well water runs through a kind of chalky quarry, with which it is ſtrongly impregnated. Hoffmann gives us many inſtances in the ſame way. Dr. Lucas tells us, he has ſeen it brought on by the abuſe of ſea water, and that he has frequently obſerved it at Spa, not only in the inhabitants but in many ſtrangers of different countries who drank exceſſively of the Pouhon water. There are inſtances of bronchocele in ſeveral parts of England, where the water is hard and calcareous.

ſometimes even death. It is the general effect of wine to enervate the ſyſtem by ſlow degrees, if men habituate themſelves to it in too great a quantity and very often to terminate in dropſy, more commonly however it prediſpoſes to inflammatory diſeaſes, to gout, aſthma, dropſy, and apoplexy.

Sedentary perſons of a plethoric habit, by drinking too much wine bring on violent pains of the back and loins, and are diſpoſed to generate calculus. Men have been ſeen to die from an inflammation of the ſtomach, by inconſiderately drinking too largely of wine after violent paſſion. Bacon tells us he had ſeen the ancient opinions, relative to the effects of wine on generation, confirmed by experience. He is of opinion that great drinkers loſe their virility.

Thoſe wines are conſidered as the beſt for common uſe which yield the leaſt ſpirit and tartar, but which contain the moſt oil and earth, ſuch are the Neufchatel wines with us, and thoſe of Burgundy. In general however, the lighter wines are more healthy than the heavy bodied wines. Briſk and ſpirituous wines have the reputation of affecting the head; and this is ſaid of Champaign, though without reaſon, when it is drank with moderation. Mellow Burgundy makes a greater impreſſion on the nervous ſyſtem. Champaign has been even recommended to gouty people, from its having been remarked that gout is very rare in that province. Burgundy on the other hand is found to irritate in this diſeaſe. The Rheniſh wines paſs eaſily by urine, and have a light acidulous taſte, which is unpleaſing to many palates.

But when theſe wines have been kept fifty or ſixty years, and ſuch I have ſometimes taſted, it is truly delicious, but ought not to be drank too freely. Theſe wines are in general preferable to moſt other ſorts of wine.

Some phyſicians prefer white wines to red, others are of a contrary opinion. It cannot be denied, however, but that the colouring part of red wines diminiſhes their levity. This colouring part is particularly diſtinguiſhable in the urine of hard drinkers, eſpecially when they are ſick. The generality of red wines are likewiſe ſuppoſed to be in ſome degree aſtringent.

Of the ſtrong wines, the Hungarian is indiſputably the beſt and moſt healthy. It ſurpaſſes almoſt all the other European wines, even thoſe of Italy, France and Spain. This wine is cultivated in the county of Zemple in Upper Hungary, in the neighbourhood of Mad, Tolezua, Benye, Talga, Schadan, Kereſtur, Tarzal, Sermeſch, and Tokay. All theſe wines are nearly of the ſame qualities, and are called Tokay wine. It has been remarked that the beſt Hungarian wine after its fermentation, yields half its quantity of ſpirit of an exquiſite flavour, and the remainder has a ſweetiſh and ſlightly acid taſte. Even wines of the moſt inferior ſort in Lower Hungary have no acidity, and depoſit leſs tartar than Rheniſh.

Wines in general, when drank with moderation by people in health, tend to counteract the putreſcency of animal food. Dr. Rogers obſerved that the putrid fevers at Cork were the moſt prevalent amongſt thoſe who drank only water with their meat.

Sweet wines, or thoſe which have not paſſed beyond a certain degree of fermentation, are commonly diuretic. This is the uſual effect of all new wines. They ſometimes excite ſtrangury and a painful heat in the urethra; I have ſeen ſimilar effects from beer in certain circumſtances. Theſe inconveniences, however, do not occur where the ſweetneſs depends on the native richneſs of the grape, and where the juice has been ſuffered to evaporate to a certain degree previous to fermentation. By this precaution theſe wines continue ſweet a long time, and are not eaſily ſuſceptible of ſpontaneous fermentation. This is the caſe with the ſweet wines of France, Italy, Spain and Perſia.

Amongſt the acidulous wines we may include the Rheniſh and Moſelle. Theſe wines when diſtilled, yield a third part of acohol, and the reſiduum has truly the taſte of vinegar. Rheniſh wine, that has not been long kept, contains much tartar. Some phyſicians undertook to explain from this why the ſtone is ſo frequent with ſome of our religious orders in Germany whoſe drink is chiefly Rheniſh. But Schmidt has very clearly proved tartar to have no noxious qualities, and that no tartar is to be found in old Rheniſh; he therefore concludes the acid of this wine to be perfectly innocent; and is of opinion that Rheniſh will rather tend to prevent then to generate calculus. It is obſervable that this diſorder is very rare in the neighbourhood of the Rhine. The

Moſelle wine has the reputation of containing leſs tartar than Rheniſh, but will keep good to any age, and is found to diſpoſe to gout.

The acid and auſtere wines which are made in Switzerland, on the borders of the Reus, the Aar, and the Limat, are ſaid to occaſion diſeaſes of the joints. But on the other hand the ſtone and gravel are ſo rare in theſe countries, that I doubt whether acid wines can have any ſhare in producing theſe complaints. Theſe diſeaſes as well as the gout, are rather occaſioned by the too liberal uſe of the rich wines of France and Italy.

Small, thin wines, are eaſily diſpoſed to ferment; theſe wines frequently become ſour, and are then no longer an wholeſome liquor. The avarice of the dealers in wines has invented a remedy for this inconvenience which is truly poiſonous. M. Macquer obſerves that alkalis and abſorbent earths might perhaps reſtore theſe wines for ſome little time, but as theſe ſubſtances give a dark colour or greeniſh tinge to the wine, together with a taſte which is not leſs diſagreeable than that they have been employed to remove, theſe retailers of poiſon mix the calx of lead with their wines, and this gives them a ſweetiſh taſte, and at the ſame time checks fermentation without producing any change of colour. This experienced chymiſt points out the means of diſcovering this fraud, by mixing hepar ſulphuris with the wine we ſuſpect to be adulterated in this way. If the mixture precipitates a brown coloured or blackiſh ſediment, we may be aſſured that lead has been added to the wine, otherwiſe the precipitate will be of a white colour, or ſimply coloured by the wine.

The celebrated Gaubius has publiſhed another means of diſcovering the preſence of this poiſon in wine. He directs a ſolution of orpiment in lime water to be poured into the wine, and if the mixture aſſumes a reddiſh or a blackiſh tinge, we may be aſſured of the preſence of litharge.

Of all wines, Rheniſh ſeems to be the leaſt ſuſceptible of adulteration, becauſe dried raiſins, litharge, &c. deprive it of its acidulous taſte, and will at once diſcover it to be ſpurious. The Dutch had a cuſtom formerly of adulterating the French wines by the moſt horrid artifices. They impregnated their caſks with the vapour of arſenic, ſulphur, and pitch, and by theſe means the wine preſerved its freſhneſs and good taſte many years; but in India it occaſioned the moſt fatal dyſenteries. Altho' the wines which are adulterated in great quantity at Hamburgh, and from thence diſtributed thro' all the northern parts of Germany, are of an agreeable taſte, yet they are not leſs unhealthy, on account of the brandy which is added to them. Theſe wines ſoon affect the head, and render the body extremely heavy and indolent. In France they now prefer champaign that does not flower in the cup, to the briſk and ſparkling wine; becauſe it is well known that the briſkneſs of champaign is in general occaſioned by the turnip juice, or birch juice that is added to theſe wines. This ſophiſtication is a very harmleſs one, becauſe in many caſes turnip juice is an excellent remedy.

Rice and vegetable ſubſtances in general afford a vinous liquor by means of fermentation. Dates, which are the fruit of the palm-tree, likewiſe yield an agreeable wine, but it ſoon becomes ſour. The Swedes make a very palatable wine from raſberries. They make a wine of the ſame ſort in England, where they prepare wine from elder berries, and many other kinds of fruit. The Engliſh are very fond of theſe wines, when they have been fermented with ſugar, and mixed with brandy. The Engliſh, as well as the French, likewiſe prepare a great deal of cyder and perry from apples and pears. Theſe liquors have the reputation of being more ſubſtantial than the common weak wines. Perry is a ſoft liquor, but its effects are no leſs fatal than thoſe of cyder, if the fruit from which it is prepared, has not been ſufficiently ripened (*q*). Theſe effects are a violent conſtipation and all the ſymptoms of the colic of lead.

Beer is an article of beverage almoſt in every country. The Chineſe prepare it from rice, and the Americans from maiz. The mucilage, which enters into the compoſition of beer, renders it in a certain degree nutritious. The hops, with which it is impregnated, have been ſuppoſed to prevent the formation of calculus, but this ſeems to be a mere ſuppoſition. The beſt kind of beer is Brunſwick mum; which is hardly inferior to the

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(*q*) This was the commonly received opinion, till Sir George Baker very ſatisfactorily traced the cauſe of this colic to the poiſon of lead. See *Med. Tranſ.* vol. i. and ii.

Spaniſh wines, and even keeps good under the Line. But I conſider this beer as well as all the rich, ſoft wines, as ſo many medicines, which are very uſeful when properly uſed, but when taken too liberally or improperly, become ſo many poiſons. Beer that is imperfectly fermented is extremely noxious, when taken in conſiderable quantity. The Dutch, prefer beer of this kind to every other, and are extremely pleaſed to ſee their glaſſes filled with froth. This beer ſometimes excites dyſury. Boerhaave has ſeen it occaſion convulſive colic, inflammation of the ſtomach and inteſtines, and death. In the memoirs of the French academy, we read the caſe of a gentleman who died after drinking a conſiderable quantity of ſtrong beer that had been imperfectly fermented. His body was opened after his death, and the inteſtines were found enormouſly diſtended with flatus.

The uſe of diſtilled liquors has occaſioned, and continues to occaſion, an innumerable train of ills to the human ſpecies. Of this claſs is brandy, which Sydenham wiſhed to ſee confined to external uſes. The properties of this liquor are the ſame whether it be drawn from wine, or corn, or cherries, or ſugar, *(rum)*, or from rice, (*arrack*). Nor are thoſe oily and delicious cordials leſs fatal, which are principally prepared from brandy, and ſerved up ſo liberally at our tables where death ſeems to inſinuate himſelf under the ſoothing garb of luxury.

Brandy diſtilled from corn is inferior in ſtrength to the brandy diſtilled in France at Coignac or Orleans. The firſt of theſe brandies contains nine parts of water to five of alcohol; whereas the French brandy contains nine parts of water, to ſeven of alcohol. The French brandy has likewiſe an agreeable flavour, which, together with its ſtrength, it preſerves to the laſt drop; whereas malt ſpirit has an acidulous and ſomewhat pungent taſte. The Rochelle brandy has likewiſe ſomething of this pungency; but malt ſpirit is more inflammable, and notwithſtanding the peculiar flatneſs of its taſte, is more heating to the body than any other.

*Kirſch-waſſer*, which is a ſpirit drawn from cherries, is prepared in every part of Switzerland; and when of a certain age, is no way inferior to the beſt French brandy. I have ſeen it make excellent punch when mixed with ſugar and lemon juice.

Rum is a more oily liquor than brandy. Arrack is much ſtronger than rum, and contains a very attenuated oil. A rational and moderate uſe of theſe liquors would, perhaps, be rather ſalutary than noxious; but there are few men who know how to do this. The world abounds with prejudices on the ſubject of ſpirituous liquors. I have heard it aſſerted in Switzerland, that kirſch-waſſer is a cooling liquor. I have ſometimes anſwered theſe people by ſaying that the vulgar have aſcribed the ſame properties to pepper, and that a ſophiſt once undertook to prove that fire was cold, and ice, hot.

Pecquet was of opinion that exerciſe was in no way uſeful to digeſtion; which was to be promoted rather by ſome ſpirituous liquor: he therefore recommended a little dram as the beſt thing after a meal, and he gave the example by taking it himſelf.

ſelf. At firſt this method ſeemed to agree with him, but after ſometime he felt many inconveniences from it, and theſe gradually increaſed to ſuch violence, that Pecquet was obliged to quit his employment, and became a melancholy victim to his own folly.

Spirituous liquors ſo far from facilitating digeſtion, gradually deſtroy the tone and of courſe the functions of the ſtomach. At firſt they ſeem to ſtrengthen it, and to do good, but theſe are tranſient effects and a prelude to general weakneſs. It can never be ſaid that drunkenneſs is the antidote to gluttony.

Spirituous liquors have been uſed as a remedy againſt flatulency; they do indeed afford a temporary relief, but the complaint ſoon returns again, and with increaſed violence. As this flatulency is occaſioned by a debility of the organs of digeſtion, the diſorder is increaſed by the uſe of theſe abſurd remedies. I knew an hypochondriacal patient, who had accuſtomed himſelf to drink a little glaſs of French brandy every evening, in order to obviate his flatulency. But his complaints increaſed daily he had frequent vertigo, and augmenting the doſe of his brandy, at length died apoplectic in the flower of his age.

I knew another who was likewiſe hypochondriacal, and whoſe wife was ſometimes exceedingly fantaſtical and troubleſome. The good man by taking a little dram on theſe occaſions, uſed to fancy himſelf ſuperior to his wife's ſallies, but as theſe whims frequently recurred, his diſorder ſenſibly increaſed in proportion as he drank ; he complained of extreme anxiety, and violent diarrhoea, and at length fell into the moſt frightful deſpair, every time his amiable partner thought proper to carry her ſingularities to any length.

The effect of brandy is to harden and contract and thicken all the parts of the body. Very hard drinkers are in the plight of dropſical patients, *quo plus ſunt potæ plus ſitiuntur aquæ*, the more they aim at extinguiſhing the thirſt that devours them, the more the brandy ſeems to inflame their inteſtines, till at length their ſtomach loſes all its ſenſibility. Theſe people commonly die of inflammatory diſorders of the breaſt, or of aſthma, or hydrothorax, or polypus. Sometimes they are carried off by apoplexy (*r*).

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(*r*) Even the hardeſt parts of the body, as the bones, are rendered exceedingly inflammable by the exceſſive uſe of ſpirituous liquors. In 1772 a poor woman was accidentally burnt to death at Coventry, who for many months before, had ſwallowed from half a pint to a quart of rum or aniſeed water every day. This brought on jaundice and other complaints; but ſhe ſtill continued her old practice of dram drinking, and ſmoaked a pipe every night. At length ſhe fell out of bed, and was found the next morning burnt to death ; though the fire in the grate had been ſmall, and the furniture in the room had ſuffered but little. Except one thigh and leg, there were not the leaſt remains of any ſkin, muſcles, or viſcera ; and the greater part of the bones were compleatly calcined and covered with a whitiſh eﬀloreſcence. Mr. Wilmer, who communicated a very circumſtantial account of this caſe to the Royal Society, concludes it with obſerving, " That her ſolids and fluids were rendered " inflammable, by the immenſe quantity of ſpirituous liquors " ſhe had drank; and that when ſhe was ſet fire to, ſhe was " probably ſoon reduced to aſhes." *Phil. Tranſ.* vol. 64.

Thierry has obſerved in ſubjects who died of exceſſive drinking, the bronchi oftentimes contracted to a third of their uſual diameter. I know by experience. that this contraction is ſometimes to be perceived in drunken men. Baron Van Swieten, obſerved in a woman, who had been much addicted to brandy, the ſpleen, pancreas, liver, and in general all the viſcera, exceedingly hardened, and as it were petrified.

I cannot agree with Thierry, who is of opinion that ſpirituous liquors may be drank with the ſame impunity in hot as in cold climates. He thinks that theſe liquors, the uſe of which, makes ſo great an impreſſion on a European in a temperate climate, would hardly ſeem to affect the ſame perſon, if taken in the ſame quantity between the Tropics, or near the Polar Circles, or at a certain height of the Atmoſphere. This opinion ſeems to be founded on two obſervations. 1. Smith aſſerts that the ſame quantity of wine which excites drunkenneſs in Europe, is hardly ſufficient to ſupport the vital ſpirits in Guinea, on account of the continual and exceſſive perſpiration which prevails in that country. 2. It has been obſerved that ſpirituous liquors in very cold countries are not more heating than water.

It is indeed indiſputable that in hot countries the perſpiration is very great, and that the ſtrength being ſoon exhauſted, a ſtimulus and renewal proportionate to the waſte will be neceſſary. The merchants who traverſe the deſerts of Aſia, to go from Turkey into Perſia, quench their thirſt with brandy, or with the ſtrongeſt Perſian or Spaniſh wine. Wine is indiſpenſable to all the Europeans who viſit Carthagena: And, indeed, all the inhabitants complain of pains in the ſtomach, when the arrival of the galleons is retarded beyond the uſual time. The Spaniards on ſuch occaſions are obliged to mix pimento with their aliment in order to excite their appetite.

Theſe obſervations prove to us, that wine and ſpirits are really required in hot climates to moderate thirſt; and in times of exceſſive heat, to counteract the exceſſive waſte by perſpiration. I have often been informed by ſome of our ſportſmen in Switzerland, that nothing relieves their thirſt in ſummer ſo much as *kirſch waſſer*, but they have told me at the ſame time that it ſhould be uſed with moderation. I have likewiſe ſeen delicate people obliged to drink wine, from time to time, during very hot weather, which, without this, would have been inſupportable to them; but none of theſe obſervations prove the innocence of ſpirituous liquors in a hot ſeaſon, eſpecially when taken to exceſs, which in every ſituation and circumſtance will inevitably do harm.

Theſe liquors would ſeem to be more harmleſs in very cold Northern climates. We indeed find that brandy is univerſally uſed in the north of Europe. This reproach is perhaps leſs applicable to Germany, though I perceive that brandy begins to be reliſhed in Lower Saxony, and even to have the reputation of an univerſal panacea. I have heard ſome of the phyſicians of that country reproach their female patients with not taking their medicines, and the ladies have pleaſantly replied, *Well, but we drink brandy!* Baron Haller, is of opinion, that the concretions in the gall bladder, which are ſo frequent amongſt the lower order of people at Gottingen, are to be aſcribed to the immoderate uſe of brandy. There is a great quantity of brandy conſumed in Poland. People of the beſt faſhion in Denmark drink cordials every morning; and at table, a little glaſs of brandy is poured on every diſh that is difficult of digeſtion. In Sweden, brandy or ſome other cordial is preſented to the company previous to their ſitting down to table, and this is done to excite appetite. Drunkenneſs is every day gaining ground in Siberia. The Laplanders begin to drink brandy in their very infancy, and ſo much are theſe people addicted to an immoderate uſe of ſpirits, that government has thought it neceſſary to interfere in this matter. The ſame exceſs prevails throughout Iceland. The Greenlanders are the only people in the North who are moderate in this reſpect, and they owe this moderation, perhaps, to their greater fondneſs for train oil. But this practice of drinking ſpirituous liquors, which is ſo generally prevalent in thoſe cold countries, does in no degree prove them to be innocent. A Laplander takes nux vomica in the colic: we are ſufficiently acquainted with its poiſonous effects. A Ruſſian will even ſwallow aqua fortis on certain occaſions.

But there are many facts which prove in the cleareſt and moſt ſatisfactory manner the bad effects of ſpirituous liquors. Bernier tells us that the Engliſh deſtroy themſelves at Bengal with their punch. If the miſſionaries at Tranquebar are to be credited, the Europeans ſuffer exceedingly from the immoderate uſe of arrack at Malabar: the inhabitants themſelves conſider it with horror. Bontius tells us that the greater number of Dutch ſailors, who die in the Indies, are deſtroyed by arrack. Cheyne tells us that the immoderate uſe of punch in America occaſions very frequent colics, convulſions, palſies, and death. I have been well aſſured that rum punch carries off a thouſand perſons every year in Jamaica. This liquor is ſo ſtrong as to be inſupportable to new comers; and the leaſt irregularity brings on the moſt violent fevers which prove fatal in a few hours. De Ulloa tells us that the number of women in Peru is conſiderably greater than that of men, becauſe the men accuſtom themſelves to the uſe of ſpirituous liquors from their youth, and therefore ſeldom attain to advanced life.

The laws and the religion of all the nations that are expoſed to great heat of climate, prove that drunkenneſs has been conſidered by them as a dangerous vice under a burning ſky. The Carthaginians had a law which forbad the uſe of wine. Mahomet proſcribed wine, and all his followers abſtained from it. The inhabitants of the Eaſt Indies are univerſally temperate and ſober, and abſtain from wine. Baron Monteſquieu has very well obſerved that drunkenneſs excites phrenzy in hot countries, and in cold climates renders men ſtupid.

There remains for me to ſpeak of tea, coffee and chocolate, conſidered as the remote cauſes of difdiſeaſe. Incapable of flattering the paſſions and prejudices of men, I ſhall frankly ſay what I think of theſe faſhionable liquors, without troubling myſelf about what the ignorant and vulgar may oppoſe to me on this ſubject. Lord Bacon was ſurpriſed that tepid liquors had been ſo much neglected by the moderns; but that venerable and penetrating philoſopher, were he now living, would with ſorrow be convinced that this negligence is no longer prevalent, but that warm liquors are now taken to exceſs.

Tea is known to be the leaves of a ſhrub cultivated in China and Japan, the only countries in which it is indigenous. The Chineſe diſtinguiſh many kinds of tea from the diverſity of the colour, odour, taſte and figure of the leaves. Some of theſe diſtinctions are altogether arbitrary. The Chineſe dealers ſometimes diſtribute the leaves of other plants for the genuine tea. The varieties of the latter are by no means numerous; all theſe ſpecies are now known to be the produce of the ſame ſhrub, gathered at different ſeaſons and prepared ſomewhat differently.

The two principal kinds of tea are the green and the bohea. Green tea is preſented in China to viſitors, the bohea is in more general uſe throughout the empire. Cunningham diſtinguiſhes the tea that is brought to England, into fine green tea, common green tea, and bohea tea. The beſt bohea is affirmed to be the buds of the tea plant gathered in March and dried in the ſun. The green teas are culled in May and June and dried over a furnace. The greater part of the tea that is brought into Europe comes from Canton. The deareſt, and at the ſame time the beſt tea I have ever taſted, is that which is brought by the Ruſſian caravans which go every two or three years to Pekin. This together with all the other commerce of the caravans belongs to the empreſs, and this tea paſſes into other hands only in the way of preſents (*ſ*).

Tea is adulterated by a variety of additional ſubſtances, but eſpecially the bohea tea, which is often mixed with an infuſion of Japan earth, and afterwards dried.

People of the lower claſs, in China, boil the cheaper and inferior ſort of tea in large quantities in a kettle for common drink. Perſons of a higher rank, drink the finer kind of tea, prepared in the ſame manner as in Europe, but uſe no ſugar with it. The Tartars, are the only people in China who mix milk with it. The Japaneſe firſt powder the tea and then mixing it with water, ſtir it as we do chocolate till it froths, and then drink it without ſugar.

The Aſiatics in general, but above all the Chineſe, extol the medicinal virtues of tea. I have ſeen ſome

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(*ſ*) The tea which is brought in this manner to St. Peterſburgh is exquiſitely well flavoured, and the flowers are ſometimes ſeen upon the ſtalk when it arrives. Its keeping ſo freſh is aſcribed to its coming by land, tea being a very delicate plant which is always a little corrupted by the ſmell of a ſhip's hold.

Chineſe preſcriptions for nervous weakneſs, head ach, teneſmus, hemorrhoids, cardialgia, and a variety of other diſeaſes, and of all of them tea was the principal ingredient. But it is well known how extremely partial the Chineſe are to every thing that originates in their own country ; and enthuſiaſts always ſee things in a falſe light.

There are many writers however, and thoſe worthy of credit, who agree that the exceſſive uſe of tea occaſions a variety of nervous diſorders in China, and likewiſe diabetes, conſumption, and death. The Ling Fi directs tea to be taken in ſmall quantities, and never faſting. The author of the book Tchang-Seng, or the art of preſerving health, ſays, " I confeſs that tea is not agreeable to me, and that my " ſtomach revolts at it every time I am obliged to " drink it ; perhaps the weakneſs of my conſtitu-" tion when young may be the cauſe of this anti-" pathy". This avowal proves how erroneouſly thoſe Europeans have argued, who have attempted to ſay why tea is ſo ſalutary to Aſiatics and ſo prejudicial to the inhabitants of our continent. Marvellous accounts have likewiſe been related of the good effects of tea in Europe. I every day hear it extolled as doing wonders, by perſons who ſuffer extremely from its uſe. Two Dutch phyſicians, Craanen and Bontikoe, who in the laſt century wrote in favor of tea and perhaps of the Dutch Eaſt-India company, aſſerted that the blood was in the higheſt ſtate of perfection, when in the moſt perfect fluidity, and that with ſuch blood there could be no diſpoſition to diſeaſe. Dr. Bontikoe maintained that tea ought to be drank to the quantity of one or even two hundred cups a day, as a preſervative from every diſeaſe, and pretended that this might be done without the leaſt injury to the ſtomach.

This notion was ſoon generally adopted, and tea was drank without moderation, with a view to thin the blood, or rather to increaſe the dividends of the company. Boerhaave very happily oppoſed the progreſs of this opinion (*t*) and put a ſtop to the ravages it occaſioned.

We are told that tea acts as a diuretic, increaſes the inſenſible perſpiration, cures head ach, drowſineſs, and palpitation of the heart, renders the body active and elevates the ſpirits. Others are of opinion that it ſtrengthens the ſtomach and inteſtines, and is good againſt indigeſtion and diarrhoea. There are ſome perſons who conſider ſtrong green tea as an emetic, and yet extol its uſe in hypochondriacal and hyſterical affection.

It cannot be denied, ſays Baron Haller, but that tea occaſions for ſome time a certain gaiety and livelineſs. This is the reaſon why I recommend a moderate uſe of tea to healthy people. I likewiſe recommend it to people who are obliged to expoſe

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(*t*) Dr. Duncan, a phyſician at Rotterdam, was the firſt who ventured to decry the abuſe of tea and coffee, in a little work entitled, "*Advice concerning hot Liquors.*"

themſelves to cold, eſpecially travellers: and I find it very uſeful when drank after expoſure to cold, damp air, as it ſoon removes the weight and laſſitude which are the effects of a common cold. In what then, may we aſk, conſiſts the real advantage of tea in theſe caſes? Boerhaave tells us it is in the warm water.

But a phyſician muſt be a Sangrado to ſuppoſe that warm water will be of uſe to every ſtomach. Hippocrates long ago told us that too great a uſe of warm water ſoftens the fleſh, weakens the nerves, renders men ſtupid, and occaſions hemorrhages, ſyncope, and death. Tea will therefore be in many reſpects hurtful from the manner in which we take it; whether we attribute the virtues of this beverage to the tea itſelf or to the fermentation of the ſugar, which I do not believe by the bye, or to the warm water. I will not inſiſt here on the aſſertion of the celebrated Linnæus, that all the plants which reſemble the tea ſhrub are venomous; becauſe I know many ladies in Switzerland, who drink only warm water with ſugar and cream, and who feel the ſame effects from this beverage that others do from tea. Linnæus is of opinion that we have to fear only from the uſe of new tea. This rule however is applicable only in China and Japan, where recent tea occaſions a degree of intoxication. This is the reaſon why the laws of theſe people have determined how long the tea is to be kept before it is drank.

There is ſomething exceedingly penetrating in the nature of tea, and perhaps at the ſame time attenuating,

nuating. It is well known that after frequent blood letting nothing gives a cadaverous complexion ſo ſoon as tea. We had a gentleman in Switzerland, who in every reſpect knew how to aſſume the tone of majeſty. He was told one day that nothing elevated the dignity of a king ſo much as when every thing around him had a pale look. This intimation was ſufficient for him. He directed all his ſervants to be blooded once a month, and obliged each of them to ſwallow fifty diſhes of tea every day.

The ill effects of tea, in caſes of hyſterical and hypochondriacal affection, are indiſputable. When I ſtudied at Gottingen, I uſed to drink tea in the night with a view to prevent drowſineſs, and it had this effect ſo completely, that at the end of the two years I purſued this method both my ſleep and my ſtrength had forſaken me, and my head was as weak as my ſtomach. I have ſeen many perſons of my acquaintance affected in the ſame manner, and from the ſame cauſe. I have ſince that time had occaſion to obſerve in Switzerland, that in many of my patients tea had the effect of rendering the pulſe ſlow and weak.; and that an improper uſe of it, very often excites flatulency and hypochondriacal affection, tremor, palpitation of the heart, vertigo, vapors, fluor albus, and ſometimes deep melancholy. Dr. Friend knew a woman who had an incontinence of urine, and afterwards a ſuppreſſion of the menſes, brought on by tea.

Many hypochondriacal people imagine they have a coldneſs at the ſtomach, and they attempt to remedy this by different methods. Some of them are careful to wear ſomething warm upon their ſtomachs, others eat every thing hot. Soup they ſay is hurtful unleſs they eat it very hot. They drink their tea in the ſame manner. I know one of theſe people at Zurich, who is almoſt conſtantly with his tea pot in his hand, and he does this with a view to warm his ſtomach. This patient is exceedingly flatulent and ſubject to cholic. I do not pretend to ſay to theſe people, as ſome of their phyſicians do, that they have really cold ſtomachs, but I call this pretended coldneſs an extreme degree of relaxation, and I attribute it in a great meaſure to tea.

Our Swiſs ladies would no ſooner give up their tea at ſtated hours, than they would their card tables. This is the reaſon why the fluor albus is as common in this country as it is in Flanders and Holland. I ſometimes ſucceed, tho' ſlowly, in the cure of this diſeaſe, by employing every thing that is contrary to the effects of warm water, ſuch as bark, chalybeates and tonics in general. I have often ſeen this diſorder in girls of ten years old. Cheyne tells us that in theſe times it attacks the moſt amiable perſons of the fair ſex, and is a very common cauſe of ſterility. All the women, who are incommoded in this manner, do not indeed drink immoderately of tea, but I believe we may venture to aſcribe it to this in the greater number of caſes; it ſeeming to be indiſputable, that the preſent general uſe of tea cooperates with other remote cauſes in the production of many diſeaſes.

Nearly the ſame things may be ſaid of coffee, which is the berry of a plant indigenous in Arabia and Æthiopia. We find no mention of it in the antient Greek writers, nor in the Arabians. Rauwolf was the firſt who made it known in Europe in 1528. It was long derived wholly from the Levant, till the Dutch began to cultivate it at Surinam, and the example of theſe has been ſince followed by the Engliſh and French in their Weſt Indian ſettlements. The American coffee is now extremely common in every part of Europe. The Levant coffee has ſtill, however, the reputation of being the beſt. There are two kinds of it, one of which comes from Mocha, and the other from Grand Cairo: both theſe have the ſame qualities. The Dutch bring their coffee from Java, and the French from the iſland of Bourbon, and they ſell this at a dear price for Levant coffee, tho' it is by no means, ſo good. The American coffee is inferior to all the other ſorts, eſpecially when it has been ſoaked in ſea water by way of adding to its weight. This method, which is very often practiſed, gives it conſiderable acrimony.

The Turks are as fond of coffee as the Chineſe are of tea. They have a method of preparing it, ſo as to render it much better than it is with us. The great ſecret is ſaid to be in their manner of roaſting it, ſo that no part of it eſcapes. They drink it copiouſly without milk or ſugar. Some writers have attempted to prove why the uſe of coffee produced few or no ill effects amongſt the Turks: but they ought ſurely to have proved firſt of all, that it really never did produce any ill effects with theſe people. There can be no doubt but that the Turks ſuffer from the abuſe of coffee as much as we do. It renders them weak and ſtupid, eſpecially when they join to it the uſe of opium.

The advocates for coffee have attributed many good properties to it; they tell us that it aſſiſts digeſtion, removes head ach, promotes all the ſecretions and acts as an exhilerant. There may be ſome truth in all this, in people who take it ſeldom, who drink little or no wine, and whoſe nerves are not eaſily affected. A young lady in Switzerland, who in the opinion of Rouſſeau joins the pen of Voltaire to the genius of Leibnitz, wrote to me one day, "without coffee I am as ſtupid as an oyſter". There can be no doubt, however, but that the abuſe of coffee does conſiderable harm, even to perſons of the beſt health; and that in relaxed and nervous habits, and in many diſeaſes, the moſt moderate uſe of it will do harm. I myſelf drink coffee twice a day, but I take only two cups of it at a time, and in this way I feel no inconvenience from it. If I exceed this quantity and drink four cups, I find myſelf affected with tremor, uneaſineſs and flatulency. I have obſerved that others in good health, but who are of a weakly habit, are affected in a ſimilar manner whenever they drink more coffee than uſual.

A long continued abuſe of coffee, by perſons of a lively and irritable temperament, excites all kinds of nervous complaints, eſpecially in women. It very often occaſions eruptions in the face, and has ſeemed to me to be one of the principal reaſons why the Swiſs women have their catamenia ſo long beyond the period of Life at which this evacuation uſually ceaſes, and hence fall into dangerous diſeaſes. I am miſtaken if I have not ſeen the exceſſive uſe of coffee diſpoſe to hemorrhages from the noſtrils, lungs, uterus, and hemorrhoidal veſſels; and lay the foundation of cough and phthiſis pulmonalis. It was obſervable that the conſumption in theſe caſes was accompanied with extreme gaiety. Thierry tells us that coffee prepared with milk ſometimes ſuddenly brings on the fluor albus. But of this I can ſay nothing from my own experience. Raulin obſerves that coffee ſometimes acts as a purgative, and occaſions diarrhoea. I myſelf have ſeen coffee, with and without milk, contribute to the bringing on hyſterical diarrhoea, a diſorder which is very difficult of cure. Thierry has ſeen people ſubject to the moſt violent head ach, which no remedies were able to relieve till they renounced the uſe of coffee. He has likewiſe ſeen, as well as myſelf, people deprived of ſleep, and loſing fleſh daily from the too great uſe of coffee. But on the other hand I have ſeen it ſucceed in procuring ſleep in a caſe in which opium had been tried without effect. A lady of condition, 66 years of age, had been long troubled with a painful gouty complaint, which deprived her of ſleep. Recourſe was at length had to opium. She took one grain of it the firſt night, but had no ſleep. The ſecond night the doſe was doubled, but was equally ineffectual; about the middle of the night the patient took it into her head to aſk for coffee, from a recollection that it had formerly been uſeful to her when watchful and reſtleſs, and that ſimilar good effects had been experienced from it by ſome others of her family. I willingly conſented to the trial, tho' without expecting any good effects from it, and the coffee was prepared with milk. The patient drank two cups of it, and ſoon afterwards fell into a ſleep, which continued an hour. She repeated this method during four months, conſtantly drinking her coffee in the middle of the night, and with the ſame good effects. This lady's ſleep was not ſo good when ſhe left off the coffee. This ſingle obſervation is not related to prove the general good effects of coffee, but merely that from a certain peculiarity of temperament it was uſeful in this caſe (*u*).

Coffee ſeems to do leſs harm in countries where beer is the common beverage. I have ſeen many a good German at Gottingen, ſwallow twenty diſhes

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(*u*) Coffee has long been conſidered as a powerful ſedative. To the caſe related by Dr. Z. it may not be amiſs to add the following obſervation made by the ingenious Dr. Percival on himſelf, " I awoke" ſays he, " at five in the morning with the " head ach. My pulſe was hard and full, and beat 92 ſtrokes " in a minute. I drank four diſhes of ſtrong coffee. In half " an hour the pain in my head was relieved; yet my pulſe " ſtill continued to vibrate the ſame number of times, but was " ſofter and leſs full. In an hour it ſunk to 70. In an hour " and a half it roſe again to 76, and in two hours to 80, which " is the ſtandard of its frequency in health. I was in a recum" bent poſture during the whole time of this experiment, which " I have ſince repeated ſeveral times, under different circum" ſtances, with no material variation in the reſult". *Eſſays, Med and Exp. vol.* ii. Coffee is found to counteract the narcotic properties of opium, and this ſeems to be the reaſon why it is taken ſo frequently, and in ſuch large quantities by the Turks and others, who uſe much opium. Sir John Pringle ſays that coffee is the beſt abater of the paroxyſms of periodic aſthma, that he has ſeen. It ſeems that Sir John Floyer, during the latter years of his life, kept free from, or at leaſt lived eaſy under his aſthma from the uſe of very ſtrong coffee. This diſcovery he made after the publication of his book on that diſeaſe.

of coffee without ſeeling any ill effects ſrom it. Nor does it do much harm amongſt the lower ſort of people who drink it exceedingly weak. But our people of faſhion who pique themſelves in being as polite and as refined as the French, drink very ſtrong coffee after dinner. I am inclined to think upon the whole, that a moderate uſe of coffee does leſs harm than a moderate uſe of tea; but that an exceſſive abuſe of coffee will be much more prejudicial than that of tea.

Chocolate has likewiſe a conſiderable influence on our health. It is chiefly prepared from the cacao which was altogether unknown to the antients, it being ſolely the produce of America. The preparation of chocolate from the nuts of this tree was known to the Americans long before any Europeans came amongſt them. It was held in great eſteem by them and conſtituted a conſiderable part of their food.

Of the different cacaos, the great cacao of Nicaragua is conſidered as the beſt. The little cacao of the Carribee Iſlands is held in leſs eſtimation, but the beſt chocolate is ſaid to be prepared by mixing the nuts of both in an equal proportion; the Caribbee nuts being more unctuous than the others.

The chocolate is in ſome meaſure ſpoiled, even at Mexico, by the addition of different ſpices. The ſame thing is done in Europe; where it is uſual to throw in cinnamon, cloves, muſk and amber. In South America chocolate is the chief article of diet. In Europe, it is conſumed in the greateſt quantity in Spain, Portugal and Italy.

Chocolate has been conſidered as a very powerful exhilarent and even aphrodiſiac, but this ſeemingly without reaſon. I conſtantly find that it renders me dull and ſtupid whenever I take it, and the abuſe of it in our climates certainly does harm. In weak and hypochondriacal and hyſterical ſubjects it will be indigeſtible by being too unctuous. Nor will the liberal uſe of chocolate agree with ſedentary people. It is very dangerous to perſons of plethoric habits, and when joined to intemperance in other articles of diet, will ſurely diſpoſe to inflammatory diſeaſes and even apoplexy. In women I have ſeen it occaſion ſuppreſſion of the catamenia and fluor albus. On many occaſions I have recommended a gruel prepared from oats, (ſlightly roaſted) with the addition of milk and a little chocolate, and I prefer this to the uſe of common chocolate, which to its own bad qualities, joins the noxious properties of all the drugs and ſpices that are occaſionally thrown in with a view to adulterate or improve it (*w*).

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(*w*) The chocolate that is prepared in London, is much more perfectly triturated, and of courſe more eaſy of digeſtion, than the foreign chocolate, which uſually throws up an oil on its ſurface. Dr. Cullen is of opinion that chocolate when well prepared is eaſily diſſolved, and by being leſs flatulent than any of the farinaceas, is a very uſeful article of food where a liquid nutrient vegetable one is required.

## CHAP. VIII.

### *Of Reſt and Motion, conſidered as the remote cauſes of diſeaſe.*

A Sedentary life, and violent or long continued exerciſe, have each of them their peculiar inconveniences, and may occaſion various diſeaſes. Too much exerciſe increaſes the rapidity of the circulation, diſturbs the functions of life, occaſions fevers, hemorrhages, &c. and when in a certain degree, death. Theſe effects of violent exerciſe will be the more likely to take place, if they who are expoſed to it have been accuſtomed to an inactive life, or if the weather is extremely hot, and the body not ſufficiently nouriſhed and refreſhed. But the effects of a ſedentary life are much more fatal to us than exceſs of exerciſe. The general effect of inactivity is to weaken the tone of the ſolids, and to diſturb and deprave all the functions of the ſyſtem. The body becomes gradually diſeaſed, and ſubject to hemorrhoids, appolexy, dropſy, and a long train of infirmities. Sometimes inſtead of painful diſorders, ſedentary men of a certain temperament become corpulent and indolent. And if this diſpoſition, to corpulency is increaſed, by a free diet they at length become torpid, and may be rather ſaid to vegetate, than to enjoy life.

Men of letters who confine themſelves wholly to their books, and take no exerciſe, either loſe their appetite, or can take only very light food. But notwithſtanding the lightneſs of this food, and the facility with which it is digeſted, theſe people are for the moſt part extremely flatulent, feel an uneaſineſs in all their limbs, and a general anxiety which they are unable to explain. They are expoſed to diarrhoea, and a variety of nervous affections: they paſs uneaſy days and ſleepleſs nights, and ſhunning all the allurements to pleaſure and diſſipation, devote themſelves to melancholy ideas, which diminiſh their little remains of health, till at length they become truly hypochondriacal, or what is worſe, melancholy. Literary people, ſays Rouſſeau, are of all men, thoſe who ſit the moſt and think the moſt; and on theſe accounts they are the moſt ſickly and unhappy. Even in the country we ſee the peaſant become hypochondriacal, if he leads an inactive life. I live in a country where the peaſants are very ignorant, and accuſtomed to the hardeſt labour, but they are well fed and drink good wine. Theſe people are in general very gay and obſtinate. Now and then, however, I meet with ſome of them, who are exceedingly melancholy, and this from their following ſome trade that requires a ſitting poſture. It is very uſual for ſhoemakers, weavers, and others, whoſe buſineſs requires them to ſit, and bend their bodies forwards, to loſe their appetite, to complain of pain in their ſide, and dizzineſs, and to have a thouſand fantaſtical ideas, together with a ſlow and almoſt imperceptible pulſe. I obſerve likewiſe that theſe people are as ſenſible to all the impreſſions of the air, as the moſt delicate women, on account of the weakneſs of their vital and natural functions, which is the foundation of hypochondriacal affection. Their perſpiration alſo is eaſily checked, and they fall into all the diſorders ariſing from this, with the ſame facility, as the fineſt lady would do in high life.

Certain poſtures or motions of the body, or any of its parts, when too violent, or too long continued may likewiſe be prejudicial. Thus, the remaining too long in a ſtanding poſture, or ſitting or leaning forwards, or lying in an horizontal poſition, have each of them their inconveniences. Violent exertions in coughing or ſneezing or laughing or even gaping, have ſometimes produced bad effects. Carrying great weights or dancing will likewiſe occaſionally do harm. Many more, ſuch as ſinging, talking, &c. might be added to theſe, but we have mentioned enough for our purpoſe. I have even obſerved that the different employments of women occaſion different nervous affections, and I am careful to attend to this in the treatment of ſuch patients.

## CHAP. IX.

### *Of Sleep and Watching, conſidered as the remote cauſes of diſeaſe.*

SLEEP, which is of itſelf ſo uſeful and refreſhing, may when indulged in to exceſs, become extremely hurtful. It is well known, that in ſleep the waſte of animal ſpirits is leſs than in a waking ſtate; and that the action of the heart and arteries is proportionably diminiſhed. The coldneſs of which every one is ſenſible in ſleep, is the effect of this diminution of all the involuntary motions. Much ſleep weakens and relaxes the body; the blood is at that time circulated more ſlowly; the inſenſible perſpiration is likewiſe much leſſened; and great and profound ſleepers become extremely corpulent (*x*), and wholly incapable of any mental

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(*x*) In ſleep, the thinner evacuations are taken up by the abſorbents; thus the urine voided in the morning is uſually high coloured, and patients who have diarrhoea likewiſe have the beſt ſtools at that time. Internal ſtimuli are not perceived in ſleep, unleſs they are very ſtrong, ſuch as cough, violent thirſt, &c. A perſon may take a purging doſe at night, and it ſhall not have any effect till morning, though if taken in the day time, it would perhaps operate in two or three hours.

occupation: their memory, and all the other faculties of the mind, becoming gradually impaired by exceſs of ſleep (*y*).

Hyſterical and hypochondriacal patients, do wrong to ſleep long, and eſpecially in the morning. Sleeping ſoon after great ſuppers is often accompanied with diſagreeable dreams. The incubus is a frequent complaint with thoſe who are ſubject to flatulency and indigeſtion. An hypochondriacal patient told me one day, that he ſometimes felt this diſtreſsful weight when in bed, even in his waking moments. His body on theſe occaſions ſeemed immoveable and exceedingly fatigued. He uſed to fancy at the ſame time, that he ſaw innumerable phantoms around his bed.

It would ſeem as if ſleep ought to be proportioned to the exerciſe of the day, whether of body or mind. People of the greateſt activity ſleep the moſt, or at leaſt the ſoundeſt. The neceſſity of ſleep is ſo real, as Baron Haller obſerves, that one of the principal reaſons which obliged the brave Engliſh garriſon to yield Fort St. Philip to Marſhal Richelieu, was that the troops, exhauſted by want of ſleep, were no longer able to manage their arms. The ſoldier ſleeps even amidſt the thunder of the cannon, when he is worn out with exceſſive fatigue.

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(*y*) Boerhaave ſpeaks of a phyſician, who taking it into his head that ſleep was exceedingly conducive to health, indulged himſelf in it to ſuch exceſs, that his ſenſibility gradually diminiſhed and he at length died lethargic.

Immoderate watching exhauſts the energy of the nervous ſyſtem, and occaſions acrimony in the blood veſſels. They who are deficient in ſleep are troubled with head ach, dizzineſs, hemorrhoids, extreme anxiety and a moroſeneſs of temper. They who ſleep much are ſeldom ſuſceptible of violent paſſions, whereas they who ſleep too little are uſually lively and choleric. I have ſeen the moſt wonderful changes produced in perſons of both ſexes by want of ſleep. The ſame cauſe, when in exceſs, will likewiſe occaſion the moſt fantaſtical and abſurd ideas, and even phrenzy. Perſons who have died from want of ſleep, have been found to have the brain perfectly dry, or in ſome degree waſted,

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## CHAP. X.

### *Of the Excretions and Retentions, conſidered as the remote cauſes of diſeaſe.*

UNDER this head of evacuations we include the ſaliva, bile, foeces, urine, inſenſible perſpiration, ſemen, catamenia, Lochia and milk.

We are not to conſound the ſaliva with the mucus of the trachea and œſophagus; becauſe the latter ought to be rejected, and the ſaliva ſwallowed. He who rejects his ſaliva is the leſs diſpoſed to hunger. This is the reaſon why ſoldiers and peaſants often ſmoke with no other intention than to keep off hunger. The ſaliva ſeems to be of great uſe in digeſtion, and they who do not ſwallow it, complain of thirſt and a dryneſs of the mouth, and loſe their fleſh. The ancients reckoned melancholy amongſt the evils that ariſe from too plentiful an excretion of ſaliva; but I have obſerved that this frequent ſpitting in melancholy and hypochondriacal patients is rather an effect than a cauſe of the diſeaſe. They who ſpit much in ſmoking, waſte and fall from their appetite. Ruyſch knew a man who was wholly deprived of his appetite, by a fiſtula in one of the ſalivary ducts.

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The bile has conſiderable influence on health. It ſeems to correct aceſcency in the primæ viæ, and by its ſaponaceous quality to diſſolve the glutinous and oily parts of our food, and blend them more intimately together (z). By the motion of a carriage or of a ſhip at ſea, bile is ſometimes made to flow into the ſtomach (*a*). There are people who can bear the jolting of an uneaſy carriage, and yet cannot bear the gentle motion of an eaſy coach without vomiting.

The bile ſometimes becomes obſtructed in the liver and gall bladder, and flows out only in a very ſmall quantity, or perhaps not at all. I ſaw few ſubjects of ſixty years of age diſſected at Gottingen, that had not ſome material affection of the liver. This in ſome meaſure might be from the great conſumption of brandy there. But as men grow old, the liver becomes harder and diminiſhes in bulk. The abuſe of ſpirituous liquors, as well as a ſedentary life, occaſions concretions in the gall bladder, by inſpiſſating the bile and diminiſhing its flow into the inteſtines. This is the great ſource of indigeſtion, conſtipation and hypochondriacal affection. When the bile is not duly ſecreted and carried off in children, they become ſubject to ſpaſm, and other diſeaſes from aceſcency in the primæ viæ. When the bile is not duly carried into the inteſtines it is abſorbed, and carried back into the circulation by the lymphatics, and thus occaſions jaundice. Indurations of the liver itſelf ſometimes take place in theſe caſes, and are the cauſe of dropſy.

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(z) The bile has generally been deemed ſaponaceous, but had no reſemblance to ſoap; its blending water with oil is a property it has in common with all mucous fluids.

(a) The flow of bile in theſe caſes, ſeems to be the *effect* and not the *cauſe* of the nauſea and vomiting.

Many writers have conſidered the bile as the ſource of almoſt every diſeaſe, but de Haen and Tiſſot have clearly proved the abſurdity of this opinion. Perhaps Baglivi did right to aſcribe certain diſeaſes to a vitiated ſtate of the bile, but we ſhould be cautious not to give way to the imagination on this ſubject.

The foeces ought to be of a firm conſiſtence in healthy people; becauſe it proves that all the nutritious parts of the aliment have been abſorbed by the lacteals. When the foeces are too hard, they are liable to occaſion head ach, opthalmia, fever, eſpecially in irritable habits, and ſometimes hernia and even apoplexy. Obſtinate coſtiveneſs occaſions flatulency and even convulſions in hyſterical and hypochondriacal ſubjects.

Navier found the rectum exceedingly diſtended in a young man who had hardly a ſtool in twenty days. The effluvia that ariſe from theſe retained fœces being abſorbed and carried into the circulation occaſion conſiderable acrimony, and eruption on the ſkin. I remember an hypochondriac, who during many months went to ſtool only once a fortnight. His ſtools were of a green colour, and yet notwithſtanding this long conſtipation his appetite continued to be voracious, nor did his belly ever appear ſwelled. Trioen ſpeaks of a conſtipation which continued three months in an old woman of eightyfour, and terminated in death. Even the retention of wind is ſometimes not altogether void of danger. Suetonius relates that the emperor Claudian having been told that ſome perſon had died a martyr to good manners by checking his inclinations in this way, iſſued an edict by which all perſons had leave to break wind in every place.

There are as many bad effects from habitual diarrhoea as from too great coſtiveneſs. Diarrhoea is ſometimes of a very ſalutary tendency, but when it recurs often, or is long continued, it generally indicates ſome defect in the abdominal viſcera. I have often obſerved a diarrhoea in hypochondriacal and hyſterical patients which has been not ſufficiently attended to, or improperly conſidered as a ſalutary effect of nature. In many ſuch patients this diarrhoea continues during ſeveral years; ſometimes returning every day, ſometimes only ſeveral times in a week, ſometimes not quite ſo often. It deprives the body of its nouriſhment, exhauſts the ſtrength of the patient, and at length becomes the cauſe of diſeaſes, of which it was at firſt only an effect. I am therefore not ſurprized that Dr. Zeviani ſhould conſider a lax belly as an unfavourable ſymptom in theſe complaints, and aſſert that a diarrhoea of only one day does more harm here than a conſtipation of fifteen.

The excretion of urine is more copious in cold than in hot countries, becauſe the inſenſible perſpiration is leſs. Women in general are able to retain their urine longer then men *(b)*. Too copious a diſcharge by urine becomes truly morbid, and conſtitutes a diſeaſe called diabetes. Gatinaria gives us the caſe of a woman who in ſixty days had voided by urine 1740 pints of water over and above the quantity ſhe had drank in that time, and yet ſhe recovered. Boerhaave attended a ſtudious young man, who was attacked with a white milky diabetes, brought on by the immoderate uſe of tea and coffee which he had taken to prevent his ſleeping. This patient died conſumptive, after being tormented with an inceſſant thirſt, which no remedies could alleviate. Mundius, in the Bologna memoirs, relates the caſe of a nun who during 87 days voided 40 pints of urine daily, tho' her daily conſumption of meat and drink amounted to no more than three pounds.

The retention of the urine is no leſs dangerous in its effects, and in general ſoon carries off the patient. Too great an accumulation of urine will ſometimes happen in pregnant women. In ſome patients the bladder has been ſeen to riſe above the pubis, and the great irritation, and exceſſive but uſeleſs efforts to evacuate it, have carried it downwards into the ſcrotum. In others, the urine has been wholly ſuppreſſed by the two ureters becoming obſtructed; the one from ſome primary affection, and the other by ſympathy. The too great diſtention of the bladder deprives it of its contractile faculty, and even

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*(b)* This is to be applied only to healthy women, and ſeems chiefly to be the effect of habit.

burſts it, unleſs it is ſeaſonably relieved by ſurgery. The celebrated Tycho Brahé, being in a coach at Prague with the Emperor, retained his urine through a falſe complaiſance and when he afterwards tried to make water, his efforts were ineffectual and he fell a victim to his delicacy.

The inſenſible perſpiration is different according to the diverſity of climate, ſeaſon, age, ſex, diet, &c. In temperate climates the ſtools and urine ſeldom exceed four pounds in a healthy man who takes eight pounds of aliment in the four and twenty hours. The reſt paſſes off by the inſenſible perſpiration. The inſenſible perſpiration is very great in hot climates and much leſs in cold countries. The inſenſible perſpiration goes on freely in a clear heavy air, and is more interrupted when the atmoſphere is light and obſcure. Old people perſpire leſs than young ones, becauſe in old age the evacuations by ſtool and urine are more copious than in youth. Indigeſtible aliment diminiſhes this evacuation, while on the other hand liquid food and ſuch as is eaſy of digeſtion increaſes it. It is likewiſe conſiderably increaſed by the uſe of hot bathing.

When the inſenſible perſpiration is increaſed to a certain degree it is diſtinguiſhed by the name of ſweat. This weakens the body exceedingly; ſweat being contrary to nature, and phyſicians very juſtly conſidering it as a dangerous diſeaſe, when it is in exceſs or too long continued. Sweat ought never hardly to take place in a healthy ſubject, unleſs he uſes ſome violent exerciſe, or commits ſome error in diet. Sweat can therefore only be accidentally uſeful in certain circumſtances. The more we perſpire beyond the uſual ſtandard of health, the more we are weakened. This weakneſs is the more evident, as we are able in many caſes to remedy it by taking a glaſs of wine and a little nouriſhment. All well informed phyſicians are agreed on this head. Ignorant practitioners, nurſes, and the vulgar in general, do indeed extol the utility and wholeſomeneſs of ſweating, and imagine that it ſaves the patient, and carries off the vitiated humours. But they do not conſider or preceive that this ill-grounded prejudice has every day the moſt fatal effects. Their experience does not extend ſo far as this.

I have ſeen many perſons, who in other reſpects were men of ſenſe, extremely obſtinate on this head, and who from exceſſive ſweating have been attacked with inflammatory diſeaſes or rheumatiſm or cutaneous eruptions or phthiſis or have perhaps become the moſt melancholy inſtances of hypochondriacal affection, after having converted their bodies into ſo many vapor machines, with a view to remedy imaginary ills, or more ſtrictly ſpeaking, to aggravate diſorders which would have yielded to the ſlighteſt remedy, judiciouſly applied.

Diminiſhed perſpiration is by no means ſo dangerous as too great an excretion in this way, becauſe the urine is then ſecreted in increaſed quantity. But there are many inconveniences reſulting from a ſudden ſuppreſſion of the perſpiration; ſuch as colds, catarrhal fevers, eryſipelas, rheumatiſm and even palſy.

Nor is it leſs dangerous to expoſe one's-ſelf to the night air, eſpecially in hot countries. Colics are very frequently occaſioned at Rome by expoſure to the evening damps of the hot ſeaſon. Similar complaints are obſerved in Jamaica and Malabar. We are told in the Chineſe book Tchang-Seng, that they who repoſe themſelves too long a time in a ſituation open to the dews, are liable to palſy or at leaſt to diarrhoea.

There will likewiſe be danger in ſuddenly checking the ſweat (*b*). I have ſeen an incurable deafneſs and other diſorders reſult from this cauſe. It is well known that Scarron's laſt illneſs was occaſioned by his throwing himſelf, with his pores open, into the Seine.

Man being intended by his maker for procreation, the effuſion of the ſeminal juices is as conformable to health and nature, as any of the other excretions; but when ever this effuſion is carried to exceſs by lawleſs irritation and a heated imagination, the moſt baneful ſymptoms may neceſſarily be expected to follow. All phyſicians have agreed that the loſs of an ounce of ſeminal liquor weakens the conſtitution more than that of forty ounces of blood. The pleaſure of venery is a kind of epileptic motion, and the relaxation that ſucceeds it, is proportioned to the violence of the preceeding ſpaſm. Aretæus ſpeaks of this robuſt liquor as rendering us lively, bold

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(*b*) Much will depend on habit in theſe matters. It is a very old practice of going from the hot to the cold bath. The Romans did this; and all ranks of people in Ruſſia bathe twice a week in water heated to 160°, and immediately, with the pores reeking, go and rol in the ſnow.

and animated, giving us a firm and manly voice, and fitting us for great undertakings. It is certain that exceſſive venery exhauſts all the powers of our nature by weakening and deſtroying the energy of the nervous ſyſtem, and thus ſapping, as it were, the very principle of life. The miſerable victims to this paſſion begin by loſing their ſtrength and fleſh, and by having the functions of all the viſcera gradually impaired; hence indigeſtion, weakneſs and dimneſs of ſight, head ach, tremor, hypochondriacal affection, epilepſy, and even phthiſis pulmonalis. The body in theſe caſes becomes extremely languid; the ſoul ſeems to be deprived of all her faculties; and the conſideration is rendered ſtill more melancholy when we reflect that theſe unhappy ſubjects are generally in the flower of their age. This exceſs is the gulph that abſorbs the beſt and moſt uſeful part of the ſtate. The licentiouſneſs that prevails in all great cities is the reaſon why we ſee ſo many weak heads, ſo many uſeleſs citizens, who were blaſted as it were in their bud, by the lawleſs pleaſures of their better days.

Marriage unfortunately does not exclude theſe exceſſes, and the evils that reſult from them. There are many huſbands who exhauſt their health in this way, and become the fathers of an infirm and ſickly offspring. The exceſs of venery ſeems to be the reaſon why the inhabitants of hot countries feel ſo ſoon the approaches of old age. The women in hot climates ſeldom bear children after their thirty-fifth year. This premature old age cannot be attributed to the heat of climate, becauſe the Brachmans by a regular life, and abſtinence from venery, attain to very advanced years. The heat of climate may, and indeed does ſtimulate the deſires, but it is the indulgence of theſe that does harm.

Premature old age is not the only conſequence of theſe abuſes. Their firſt effect is to occaſion involuntary emiſſions which weaken the patients exceedingly. Theſe pollutions may be excited indeed by innocent means. The idea of a beautiful woman, ſays Baron Haller, may be one cauſe, but this is not enough to occaſion infirmity. The effects we allude to, occur without the leaſt ſtimulus or idea of a woman, even in the midſt of the moſt ſerious occupations, and ſuch as are the moſt oppoſed to voluptuouſneſs. In theſe caſes there is evidently a relaxation of the ſpermatic veſſels.

When theſe emiſſions are the effects of voluntary excitement in young perſons we ſee them feel at a more advanced age the ſad effects of their former miſconduct. They have frequent pains at the ſtomach, vomiting, pains of the breaſt, loins, thighs, and legs. Their eyes are ſunk and hardly able to ſupport a ſtrong light. I have been told by a very careful and attentive maſter, that young people, who have indulged themſelves in this diſtreſsful vice, are unable to ſupport themſelves even in a kneeling poſture, and ſometimes faint in their poſition ; that they have a ſickly countenance, their eyes ſunk, their ears of a dull white, and their lips of a pale complexion. That they have no appetite, and often complain of pains in the breaſt and great thirſt. Aretæus has likewiſe very well deſcribed to us the effects of theſe pollutions, whether voluntary or involunvoluntary. Too frequent a waſte, ſays he, of the ſeminal fluid brings on the infirmities of age prematurely, and renders men indolent, languid, ſickly, effeminate, and impotent negligent; in every thing, and unfit for any occupation (*c*).

I likewiſe conſider this abuſe as one of the principal cauſes of hypochondriacal affection, the nature of which is ſo little known altho' its effects are ſo generally felt. This unhappy diſorder may be, and indeed is the reſult of many other cauſes, but it will be always more dangerous in proportion as it is brought on by exceſs of venery. It is wonderful to ſee how many young men, who from being gay, lively, and in perfect health before marriage, become ſome months afterwards ſickly, melancholy, indolent, and in one word, hypochondriacal. I have likewiſe ſeen people plunge themſelves into all the horrors of this complaint, by marrying when the flower of their age was over, and when their powers had begun to ſuffer from the injuries of time. Plater ſpeaks of a man who married in advanced life, and who was ſeized with ſo violent a ſpaſm about the breaſt, on his wedding night, as to die in the arms of his wife. Salmuth ſaw a learned but hypochondriacal man become truly phrenitic from the

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(*c*) If an apology for altering and mutilating the expreſſions of Dr. Z, is any where neceſſary, it will be particularly ſo in this part of the work, where I ſay much leſs than he has ſaid, and with conſiderable variations. The truth is that ſome of his obſervations, tho' exceedingly juſt and uſeful, ſeemed improper for readers of every claſs, and they who read with a view to inſtruct themſelves in phyſic will find the ſame things in a work written by Dr. Tiſſot.

ſame cauſe. Dr. Tiſſot knew a man who in his fiftieth year married a young wife, became blind three weeks after marriage, and died at the end of the fourth month. If the ſenſes corrupt the mind, the latter in its turn may be ſaid to deprave the ſenſes, when we indulge a cupidity that proceeds altogether from the imagination; or from an incontinency, that is habitual even after nature herſelf is ſilent.

A combination of melancholy with hypochondriacal affection is likewiſe one of the effects of this abuſe. A patient in this ſtate ſometimes ſeeks for relief in the embraces of his wife, and this conſtantly adds to his complaint. Incontinency melts down all the powers of the ſoul. Socrates uſed to reproach Alcibiades with ſpoiling the fineſt genius in Greece by his libertiniſm. Newton, at the age of eighty-five, carried with him to the grave what moſt of our young men loſe before they are fourteen. In ſhort married people have been ſeen to bring on a variety of diſeaſes by their incontinency. Some have loſt their eye ſight by a cataract; others have died of hemopthyſis; or after languiſhing many months, have been carried off by tabes dorſalis.

Phyſicians, who are accuſtomed to the great, know how conſiderable a ſhare libertiniſm has in aggravating and complicating their diſorders, and rendering them no longer diſtinguiſhable. It is to this cauſe that Dr. Tiſſot attributes the fatality which in general accompanies the diſorders of people of faſhion. Women are in general much leſs incommoded by their incontinency than men. In certain circumſtances, however, abuſes in this way are extremely fatal to them. It ſeems more eſpecially to be one of the great cauſes of the frequency of abortion, and Werlhoff is of opinion that without an attention to this article, all our remedies to prevent miſcarriages will be ineffectual. I have had more than one opportunity of confirming the truth of his obſervation.

The catamenia in women are very different according to different circumſtances. In hot countries they appear at an early period. In Italy and Spain women begin to menſtruate at twelve years of age, and this is the reaſon why girls are declared marriageable at that age, by the Roman law. Shaw tells us that in Barbary the women bear children at eleven years of age, and are grand mothers at four and twenty. At Goa, girls conceive at nine, ten and eleven years of age, and are paſt pregnancy at thirty. Women do not begin to menſtruate till a later period in cold and mountainous countries: in general, at fourteen years of age. If the catamenia appear much earlier than this, it is the effect of a very particular temparament: if they are delayed till the eighteenth year, it is a diſeaſe. The evacuation is in the greateſt quantity in temperate climates: in very hot countries it is much leſs. Women who are much habituated to violent exerciſe, likewiſe menſtruate but little. This is the caſe with the women in Brazil who do all the laborious work. Very fat women likewiſe menſtruate but little when they drink ſparingly, and are not voluptuous. They are not much affected by irregular menſtruation, but the approach of the catamenia is commonly announced by very acute colic pains. Women of a melancholy temparament menſtruate little and irregularly. A voluptuous life conſtantly adds to the frequency and quantity of this evacuation : this is the reaſon why women who live luxuriouſly in large towns generally menſtruate every fifteen days. Laſcivious girls are likewiſe ſubject to frequent menſtruation. Love ſays Baron Haller animates the motion of the blood, augments the number of pulſations, and occaſions an inequality in the pulſe, which may be aſcribed to the fear which is the inſeparable companion of love : a violent paſſion as it approaches the moment of enjoyment is accompanied with extreme heat, violent pulſation of the heart, ſometimes increaſed activity, ſometimes tremor, and gives as it were the ſenſation of fire circulating through the blood veſſels : This is the reaſon why in women of warm paſſions the catamenia ſometimes take place previous to the moment of conſummation. Various ſymptoms announce the approach of the menſtrual period. The generality of women feel a tenſion about the ſacrum, head ach, and pain in the breaſt : ſome have diarrhoea ; others nauſea, vertigo, and cramps. This flow commonly goes on increaſing, till the third day, and gradually diminiſhes till the ſixth. In ſome women it continues only two days, in others during eight ; but in theſe laſt there is uſually ſomething amiſs. In young women the catamenia, after their firſt appearance, ſometimes do not return again for a year, and are ſome time before they follow a regular period. In general, the menſes appear every thirty or thirty one days, and ceaſe during pregnancy, but to both theſe rules there are many exceptions. An immoderate flow of the menſes (*Menorrhagia*) like all other hemorrhages, is extremely prejudicial to health. The external parts of the body become cold and pale; the patients are ſubject to nauſea, head ach, languor, cramps, ſyncope, hyſterical affection, and even convulſions. If the diſcharge continues to a certain degree, it occaſions dropſy, as I have ſeen happen in a woman thirty-five years of age, who, during ſix years, was ſubject to continued menorrhagia. Firſt her face began to ſwell, and then the reſt of her body, till at length ſhe became truly dropſical. Others are attacked with ſlow fever, in conſequence of menorrhagia, which terminates in conſumption. In ſome it occaſions ſterility, and in others abortion.

We ought not to omit in this place the flow of the menſes beyond their uſual period. It is well known that the catamenia flow irregularly and more copiouſly as they approach their final period. Hence it has been conſidered as exceedingly uſeful to have theſe latter diſcharges of a longer duration, which take place about the fiftieth year. The flow is, in general, morbid only when extended beyond that term, and this is by no means uncommon, for I have myſelf ſeen it beyond the ſeventieth year. But whenever continued beyond the fifty-firſt or fifty-ſecond year, it occaſions morbid ſymptoms even in women who have before this period enjoyed the beſt health. It is not unuſual to ſee this final ſuppreſſion preceded by cramps, vertigo, and even ſyncope. I have ſeveral times ſeen theſe cramps affect the bladder with inexpreſſible pain, and occaſion a retention of urine which continued a day or two.

When the catamenia continue beyond the fifty-fifth year, they commonly occaſion dropſy, or there is ſome hidden diſorder, perhaps cancer, in the uterus. Thus a woman ſeventy-one years of age, after having had a return of this flux during four years, had a ſuppreſſion of the diſcharge by expoſure to cold when at church, and ſoon afterwards a cancer manifeſted itſelf in the uterus, and after exciting the moſt horrid ſymptoms carried off the patient in two months. Boerhaave tells us that uterine hemorrhage happening between the age of fifty and ſixty years uſually terminates fatally.

A ſuppreſſion of the menſtrual evacuation is likewiſe productive of many inconveniences. Languor, depravation or loſs of appetite, nauſea, flatulency, palpitation of the heart, tenſion of the breaſt, hyſterical ſuffocation eſpecially when in bed, dry cough, difficulty of reſpiration, blueiſh circles around the eyes, head ach, dizzineſs, violent pains of the joints, œdematous ſwellings of the legs; theſe are the more general effects of obſtructed catamenia. Sometimes, tho' more rarely, the patient falls into melancholy from this cauſe, as I had occaſion to obſerve not long ago. In ſome patients the menſes are ſeen to flow from different parts of the body. Many inſtances of this ſort are related by authors. I myſelf have lately had the care of a patient ſixteen years of age, who as yet has had no flow from the uterus, but for a twelvemonth paſt, has pretty regularly had an hemorrhage from the noſe every month, which has continued two or three days. Whenever this diſcharge has omitted to take place, ſhe has conſtantly complained of colic pains, extreme anxiety, appears ſad, and has a very ſlow and weak pulſe. Another patient, aged twenty-eight years, and who from ſuppreſſed catamenia had experienced the ſymptoms uſual on ſuch occaſions, at length was attacked with hemoptoe, which returned with great violence every month, during ſix months, but on the ſeventh month it failed in its appearance, and the patient had a violent pleuritic ſtitch, accompanied with a ſmart fever and delirium. Some years previous to this, the ſame perſon had menſtruated from the extremity of the index.

Dr. Schobinger of Saint Gall, has ſeen a girl whoſe hands regularly ſwelled at the approach of the menſtrual period, till at length nature relieved herſelf by a diſcharge from the two fore-fingers. Hippocrates tells us that ſuppreſſed catamenia are the cauſe of beard in women. I will not undertake to ſay, whether this opinion is well founded or not.

We have before obſerved that the ceſſation of the menſes does not always take place at the ſame period. In robuſt and corpulent women they ſometimes diſappear at thirty-five. In delicate women they return till a later period. In general the time of this ceſſation is conſidered as of great conſequence to the health of women. In many it is attended with no change of health. Delicate ſubjects, who have been accuſtomed to profuſe diſcharges, find themſelves relieved at this period. But this is not the caſe with all. In many women, the natural ſurplus of blood continues to take place, although the organs that are deſtined to evacuate it are cloſed up; or theſe organs may continue to be unchanged, or at leaſt not wholly collapſed, after the uſual accumulation has ceaſed to take place. Theſe, therefore, will be the principal ſources of female diſeaſes at this period of life (*d*).

The lochia may likewiſe be mentioned here, becauſe this diſcharge is of the greateſt conſequence in the recovery of lying-in women. This evacuation for ſome days after delivery conſiſts of pure blood, till at length by the contraction of the uterine veſſels, and the increaſe of milk in the breaſts, it gradually becomes ſerous and leſs copious, and in the ſpace of a fortnight, or little more, generally ceaſes. In ſome women it continues only ten days, and now and then not ſo long in ſubjects who have been accuſtomed to menſtruate in ſmall quantity, and whoſe veſſels are of little diameter, or who have had much flow during the firſt days after delivery.

An immoderate flux of the lochia is ſuppoſed to be very often fatal to young and robuſt women. This may indeed be true; but the hemorrhage in theſe caſes is very often the effect of ſome injury done to the uterus in delivery. Profuſe lochia differ not from profuſe catamenia when the uterus is unhurt.

A ſuppreſſion of the lochia is commonly unfavourable, and very often dangerous. It will be leſs alarming

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(*d*) The reader will do well to conſult a very ingenious paper, on the management proper at the ceſſation of the menſes, by Dr. Fothergill, in the vth. volume of Med. Obſ. & Inq.

ing in women who uſually menſtruate in ſmall quantity, but whenever this ſalutary diſcharge is ſuddenly checked by expoſure to cold, or other cauſes it commonly occaſions diſagreeable ſymptoms. Baron Haller has ſeen the blood diffuſing itſelf through the orifice of the fallopian tubes, and this more particularly in caſes where the neck of the uterus was contracted. This is a circumſtance worthy of obſervation, and which does not ſeem to have been ſufficiently attended to.

A woman came to conſult me not long ago, who twenty years before this had drank a bottle of cold water immediately after her delivery, by the advice of her midwife, with a view to prevent her ſweating. The lochia were ſuppreſſed by theſe means, and brought on a cough, which degenerated into incurable aſthma. Her menſes have never appeared ſince that period. A ſuppreſſion of the lochia is now and then ſucceeded by deep melancholy, or by a true phrenzy, which is commonly periodical. I remember to have ſeen a woman thirty years of age, who fell into a profound hyſterical melancholy from this cauſe. This woman was affected with extraordinary timidity, and conceived a ſingular averſion for all the ideas which before this had been the moſt flattering to her : ſhe complained inceſſantly of head ach, was averſe to all food, felt a languor in all the parts of her body, her legs trembled, and ſhe had a frequent ſenſe of ſuffocation. Baron Van Swieten tells us that lying-in women ſometimes fall into incurable mania from ſome affliction of the mind, and this we may reaſonably aſcribe to the ſame cauſe. Dr. Hirzel, of Zurich, has ſeen a ſuppreſſion of the lochia brought on by extreme grief, and ſucceeded by univerſal tetanos. A woman at the age of thirty ſix was delivered of her firſt child, which died ſoon after its birth. She had always been of a timid diſpoſition, and inclined to melancholy, and joined to theſe, other marks of a weakneſs of the nervous ſyſtem. The patient had fatigued herſelf extremely, during her labour, through the imprudent ſollicitations of an ignorant midwife, and her ſtrength was ſo much exhauſted by theſe exertions, that ſhe became convulſed, and now and then delirious. The firſt day after delivery the lochia flowed in ſmall quantity, and the next day wholly diſappeared. During the whole of that day, the delirium returned from time to time, her pulſe was ſtrong and quick, ſhe ſweat abundantly, and voided her urine without difficulty. The third night ſhe ſlept pretty well, but ſtill her pulſe continued as before, and ſhe complained of violent thirſt: the lochia came down again a little, and the patient became more chearful. The night between the fourth and fifth, ſhe was very reſtleſs, and complained of violent ſpaſmodic pains in the lower belly; the pulſe was equal, the urine white, and the lochia appeared in very ſmall quantity. The pulſe ſoftened, the ſweat diminiſhed, and ſhe ſlept compoſedly: but ſhe fell inſenſibly into a deep melancholy, which increaſed exceedingly on the eleventh day, after an uneaſy night, and the following evening ſhe was ſeized with an univerſal tetanos, which continued all the next day, till the evening. On the fiſteenth ſhe had a miliary eruption. This patient recovered, but nine months elapſed before the melancholy left her. This caſe proves, how grievous may be the ſymptoms reſulting from a ſuppreſſion of the lochia (*e*), when any paſſion of the mind is the cauſe of ſuch a ſuppreſſion.

Too copious a flow of milk may have bad effects, eſpecially if the woman is of too delicate a habit. If this flow is encouraged by giving ſuck, the patient becomes languid, loſes her chearfulneſs and appetite, feels cramps, head-ach, and ſickneſs at the ſtomach, and unleſs ſeaſonably relieved, hectic fever comes on, and the patient falls into conſumption. A pregnant woman who gives ſuck, will be in danger of abortion, and the milk ſhe gives will be unwholeſome.

The ſuppreſſion of the milk is likewiſe very often productive of diſagreeable effects. The fever which uſually ſupervenes a few days after delivery, when the breaſts become turgid with milk, is ſeldom either dangerous, or of long continuance, and terminates with the relaxation of the diſtended parts, and a gentle diaphoreſis. But in ſome caſes it occaſions indurations of the breaſts, which degenerate into abſceſs, or remain hard and indolent during a ſeries of years, and at length become cancerous. Sometimes a ſudden repulſion of the milk has occaſioned inflammation of the uterus.

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(*e*) The Reader who conſiders the ſtate of this patient previous to her lying-in, and her violent exertions during labour, will perhaps be diſpoſed to aſcribe all theſe ſymptoms to morbid irritability, and weakneſs of the nervous ſyſtem rather than to the ſuppreſſion of the lochia, which ſeems to have been only an effect of the diſeaſe. I did not chuſe to ſuppreſs the caſe, however, becauſe it may have its uſe.

We have now examined, in a general way, the various effects that are liable to be occaſioned by the morbid ſtate of the excretions; and however great the number and diverſity of theſe may ſeem to be, they are, perhaps, not difficult to be diſtinguiſhed, when we know how to appreciate the effects of each cauſe, and are able to combine them properly. It ſo commonly happens that one particular excretion, by being vitiated, produces ſome morbid change in one or more others, that it will be almoſt always neceſſary to conſider the ſtate of ſeveral of theſe, to be the better enabled to eſtimate the effects which ſeemed to be derived wholly from one. The Phyſician ought to know at the ſame time, that the ſame changes do not always excite preciſely the ſame effects, becauſe theſe will be variouſly modified by different circumſtances, of which he ought to be previouſly aware, ſince without this knowledge, he will only ſee things improperly, or in part.

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## CHAP. XI.

### *Of the Paſſions, conſidered as the remote Cauſes of Diſeaſe.*

TRISTRAM Shandy, has with ſome pleaſantry compared the body and ſoul, to a coat and its lining; if you rumple the one, you rumple the other.

Some phyſicians have attributed to the ſoul, a certain *impetus* (ενορμων), or *impulſive power*, and another to the body. The former, according to them, is the efficient cauſe of all the violent paſſions; the latter, the efficient cauſe of all the violent movements which the body executes by means of the nerves. This doctrine is as ancient as Hippocrates. Kaw Boerhaave has ſpoken very fully on it; but Gaubius, better and with more preciſion (*f*). I underſtand by this *impulſive power*, ſimply the temperament; becauſe I am of opinion, that by this, all our paſſions ſentiments and actions are determined. I do not mean, however, to inveſtigate the

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(*f*) See his *Inſtitutiones Pathologiæ*. Page 74, & ſeq.

theory of the paſſions, becauſe this would be to deviate from the plan of my work, I ſhall, therefore, proceed to enumerate ſome of their more general effects.

The Paſſions act either ſuddenly with more or leſs energy, or ſlowly. They are either productive of ſudden death, or they are only the remote cauſe of death, or they undermine us gradually. The power and extent of the cauſe, but above all, the temperament, will always determine the degree of danger. A man, who with little penetration, has a great ſhare of vivacity, will hardly feel a contraſt which will terrify almoſt to death another perſon who with leſs vivacity, and more penetration, perceives at once all that may reſult from it. A ſtupid fellow cannot conceive how other people complain of injuries to which he is altogether inſenſible; but on the other hand, this man ſuffers from a thouſand apprehenſions which others of better ſenſe feel not, becauſe they know them to be groundleſs. In general, men of a powerful imagination ſuffer the moſt from violent ſallies of the ſoul; and they who have more of reaſon than imagination, ſuffer moſt from the ſlower movements of the mind. Very indolent or ſtupid people, in general, ſuffer the leaſt from the Paſſions, but they who unite an enlightened reaſon to a lively and reflecting genius, are the moſt agitated by them. Boerhaave, who was a man of ſo much moderation, ſaid he was convinced by his own experience, that the remembrance of an injury is not to be loſt, however much we may endeavour to forget it, unleſs ſome more powerful and permanent idea comes in to efface the remembrance of the firſt : he adds, that the mind is even occupied with it in dreaming.

All the paſſions, when carried to exceſs, bring on very formidable diſeaſes. Sometimes they occaſion death, or bring us at leaſt into imminent danger. The moſt reputable phyſicians agree in opinion, that terror may occaſion apoplexy, and death; and indeed, they conſider apoplexy as the moſt common effect of violent Paſſion. The heart is ſo violently affected by theſe extraordinary impreſſions, that it collapſes ſo as neither to receive nor emit any blood. This is the reaſon why the face becomes pale, and the lips of a blueiſh complexion, whilſt all motion ceaſes, and a perſon ſometimes falls down dead inſtantaneouſly. A Paſſion, without even being carried to exceſs, will ſometimes occaſion a difficulty of breathing, together with a ſenſe of ſtricture in the breaſt, and an heſitation to ſpeak, the tongue remaining as it were immoveably fixed to the palate. The weaker Paſſions ſpeak, the ſtronger Paſſions are mute.

Altho' the play of the Paſſions depends principally on the temperament, and they are to be conſidered as the unfolding of the ſenſitive faculties applied to a certain object, and to a certain degree, yet ſtill it is the ſoul that determines them as a ſecondary cauſe.

Hyſterical and hypochondriacal affection, and likewiſe melancholy, may indeed ariſe from many phyſical cauſes : but theſe diſeaſes are likewiſe ſometimes the effects of grief in the moſt healthy people, altho' we are unable to ſay how this is effected.

Violent tranſports of the mind, will likewiſe occaſion the return of particular diſeaſes, at a time when from the ſtate of the patient there would ſeem to be nothing to fear. This is particularly inſtanced in epilepſy. I have likewiſe obſerved that in hyſterical women when the diſorder was in a high degree, the ſpaſmodic affection becoming leſs violent and frequent, was not ſo much to be conſidered as a ſign of their recovery, as their beginning to be leſs affected by certain ideas, which in health produced no perceptible effect, but which, when the diſeaſe was preſent, conſtantly excited a fixed and terrified look, difficulty of reſpiration, and ſpaſmodic movement of the limbs. The body follows the affections of the ſoul in theſe caſes, and acts as the ſoul feels. It will therefore not be amiſs for us to conſider the principal effects of the moſt ſenſible Paſſions, becauſe different Paſſions very often produce different effects; or the ſame Paſſions may excite different circumſtances, either in the ſame or different individuals.

Joy, which Cicero has very well defined, *a voluptuous tranſport of the ſoul*, and in which he contended a wiſe man ought not to indulge himſelf, altho' he himſelf confeſſes in an unexpected moment to have given into it even to exceſs; this Paſſion I ſay is much more dangerous to life, than ſudden grief. The inſtances we meet with of the fatal effects of ſudden joy, are more numerous than thoſe of the latter. Sophocles, being deſirous of proving

ing that at an advanced age he was in full poſſeſſion of his intellectual powers, compoſed a tragedy, was crowned, and died through joy. The ſame thing happened to Philippides the comic writer. We ſee Chilon, of Lacedemon, embracing his ſon who had borne away the prize at the olympic gâmes, and dying in his arms. Two Roman ladies, ſeeing their ſons return from the battles of Traſymenus and Cannæ, died in the ſame manner. M. Juventius Thalna, on being told that a triumph had been decreed to him for having ſubdued Corſica, fell down dead before the altar at which he was offering up his thankſgiving. Vaterus relates, that a brave ſoldier, who had never been ſick, died ſuddenly in the arms of an only daughter, whom he had long wiſhed to ſee. A worthy family in Holland being reduced to indigence, the elder brother paſſed over to the Eaſt Indies, acquired conſiderable riches there, and returning home, preſented his ſiſter with the richeſt jewels: the young woman, at this unexpected change of fortune, became motionleſs and died. The famous Fouquet died on being told that Louis XIV. had reſtored him to his liberty. The niece of the celebrated Leibnitz, not ſuſpecting that a philoſopher would hoard up treaſure, died ſuddenly, on opening a box under her uncle's bed, which contained ſixty thouſand ducats. Dr. Mead tells us that in the memorable year of the South Sea bubble, more of thoſe went mad who acquired fortunes, than of thoſe who loſt them.

Laughter, when in exceſs, has ſometimes occaſioned death. Thus it is related of Zeuxis, that having painted an old woman and attentively conſidered the picture, he found it ſo ſingularly groteſque as to die through laughter (*g*) Philemon was walking in a garden, with his friends, when an aſs came trotting towards them, and with great compoſure ate a diſh of figs. " This aſs, (ſaid Philemon,) would, perhaps chuſe to have wine with his figs ;" the wine was brought, the aſs drank it, and Philemon laughed to exceſs, and died.

Anger is a violent tranſport of the ſoul joined to a deſire of revenge. The effects of this paſſion ſeem to be to ſtimulate every thing that is ſenſible and moveable in man. The face reddens, the eyes ſparkle, the muſcles are contracted, and the heart beats with increaſed quickneſs, even an hundred and forty ſtrokes in a minute. Violent anger has ſometimes produced hemorrhages and ſubcutaneous extravaſations; or ſome veſſel of the brain becoming ruptured by theſe tranſports, a fatal apoplexy has taken place. Sometimes the whole maſs of blood ſeems to retreat towards its centre, the cutaneous veins diſappear, the face becomes pale, the voice is faultering or altogether loſt, an univerſal tremor takes place, and the perſon who is thus affected, totters, and at length falls down in a ſtate of inſenſibility, and perhaps dies, unleſs nature is ſpeedily relieved. There have been ſome inſtances of exceſſive anger being ſucceeded by epilepſy, colic, or a violent degree of fever.

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(*g*) This anecdote of Zeuxis is probably ſabulous.

I was called not long ago, in company with Dr. Wæterli, to a young woman who had fallen into a convulſive ſtate in conſequence of a violent fit of anger. Her menſes had appeared that day, but were checked by this tranſport; ſhe ſeemed to have an extreme ſtricture of the breaſt, and was unable to ſwallow, or to ſpeak; but yet as ſhe ſat ſupported in her chair, her legs trembled with violence, and ſhe groaned inceſſantly during the hour ſhe continued in this ſtate. I recommended emollient clyſters, with a view to recall the catamenia, and Dr. Wæterli propoſed bleeding in the foot; both theſe methods were tried: at length, after repeated clyſters, the patient voided much bilious matter both by ſtool and vomit, the ſpaſm ceaſed, and the menſes began to flow copiouſly again, before morning (*h*).

Violent anger has ſometimes the effect of exciting an increaſed flow of bile. In ſome, this occaſions vomiting; in others, it paſſes off downwards, and cauſes diarrhoea; or by being retained, from a ſtricture of the gall ducts, will perhaps be abſorbed, and thus occaſion jaundice. In caſes where anger has been ſucceeded by extreme grief, obſtructions have taken place in the liver. Delicate women ſometimes void a conſiderable quantity of pale urine in theſe circumſtances, and hyſterical women, after violent anger, are affected with pains

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(*h*) This caſe ſeems to have been truly an hyſteric paroxyſm. Of all the occaſional cauſes of hyſteric affection, violent paſſions of the mind are thoſe which throw the animal oeconomy into the moſt ſudden and ſurpriſing commotions in perſons of great ſenſibility; and it is well known that women are the moſt irritable during the flow of the catamenia.

in the joints, ſpaſmodic colic, and ſometimes with uterine hemorrhage.

The effects of terror are merely ſimilar to thoſe of anger, but in general are more violent. Like anger it occaſions ſudden palpitation of the heart, weakneſs and trembling of the knees, ſo that a man in this ſtate is unable to ſave himſelf by flight. The menſtrual evacuation, in women, is much oftener checked by terror than by anger. Sometimes exceſſive terror ſeems to give men a preternatural degree of ſtrength, as is the caſe with madmen, and drowning perſons. In ſome caſes, terror has not only excited immediate convulſions, but has occaſioned them to return periodically. Dr. Tiſſot tells us of a peaſant who having dreamt that a ſerpent was twiſted around his arm, exerted ſome violent effort to relieve himſelf from this ſuppoſed enemy, and his arm was for a long time ſubject to a violent convulſive motion, which returned three or four times a day, and ſometimes laſted an hour. Epilepſy is indeed ſometimes cured by exceſſive fright, but it is the more uſual effect of terror to occaſion this diſorder. Wepſer has given us a caſe in this way, where the patient firſt became epileptic after an exceſſive fright, and afterwards died apoplectic. I remember to have ſeen a woman at Gottingen attacked with epilepſy from being ſuſpected of having killed her child. But here is a fact which will always do honour to the ſagacity of Boerhaave. A girl, in the hoſpital at Harlem, upon receiving a great fright fell into convulſions. Immediately, all who crouded round her to ſee or aſſiſt her, were ſeized in the ſame manner. For the ſpace of two days, the diſorder continued to be propagated; attacking one perſon ſucceſſively at the ſight of another, till almoſt all the boys and girls in the houſe, laboured under the paroxyſm. The phyſicians of the place aſſembled, and preſcribed the moſt powerful nervous medicines without any effect; at length, recourſe was had to Boerhaave, who obſerving in what manner the diſorder was communicated, reſolved to try the force of an expedient which might affect the imagination. Accordingly, ordering ſeveral portable furnaces to be placed in the apartments, on which were laid burning coals, and hooks of iron of a particular ſhape, he informed them, that ſince medicines had proved ineffectual, he knew of no other remedy than that the perſon who ſhould be ſeized with the next paroxyſm, whether boy or girl, ſhould be burnt in the arm with a hot iron, as far as the bone. All were ſtruck with ſuch terror, on hearing this ſentence announced, that when the paroxyſm would again have ſeized them, they endeavoured with all their power to reſiſt its progreſs, and their reſolution was attended with ſucceſs. Abraham Kaau Boerhaave, the nephew of the celebrated profeſſor, who relates this fact at length, concludes it with obſerving how uſeful it is to turn aſide the mind from an idea on which it was too intent, it being well known, ſays he, that fright, an epidemical fever, ſalivation, matrimony, and even the rod, *(virga)* have removed epilepſy (*i*).

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(*i*) It has been obſerved in the infirmary at Edinburgh, that women have been ſeized with hyſteric fits, from beholding others attacked with them.

Fear has been ſaid to make the hair ſtand upright, and to contract the pores from which the hairs iſſue in the ſame manner as cold does. There are inſtances in authors even of the colour of the hair being changed by exceſſive fright. Thus Pechlin relates that a young man, who was ſhipwrecked near Leghorn, became ſuddenly grey, and was ſo twenty years after this accident, tho' before this his hair was black. Stahl ſpeaks of a young man of family, who being condemned to death for ſome enormous crime, became grey likewiſe in the ſpace of a ſingle night (*k*).

Many obſervations tend to prove that ſudden fear has occaſioned ſyncope and even death(*l*). The face grows pale, the blood ſeems to ſtop in the vena cava or in the right auricle of the heart, the veſſels become diſtended, and the heart itſelf in theſe caſes has ſometimes burſt. Philip II, king of Spain only ſaid to his firſt miniſter the cardinal Eſpinoſa, *Cardinal know that I am maſter:* and the miniſter was ſo much terrified that he died a few days afterwards. The ſame prince perceiving that one of his miniſters anſwered him with ſome heſitation, gave him a ſevere rebuke; the miniſter withdrew from the apartment and died. Philip V, died ſuddenly on being

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(*k*) Stahl relates this ſtory on the faith of Schenk; there are many ſimilar caſes related by authors, but none of them are perhaps ſufficiently authenticated to be admitted as facts.

(*l*) The French phyſicians who wrote on the plague at Marſeilles went ſo far as to deny its being contagious, and aſcribed its propagation chiefly to fear. Dr. Mead has ſufficiently pointed out the ridiculouſneſs and danger of this opinion. Fear may indeed render men more ſuſceptible of contagion, and this is all that can be aſcribed to it in ſuch caſes.

told that the Spaniards had been defeated, and on opening him his heart was found ruptured.

The apprehenſion of ſome unavoidable ill, weakens and relaxes all the powers of the ſyſtem, diminiſhes the pulſe, ſuppreſſes the catamenia, cauſes a difficulty of reſpiration, and ſometimes checks the inſenſible perſpiration and occaſions ſhivering. In ſome caſes, however, it excites ſweat; or brings on an involuntary excretion of the foeces. Baron Haller has ſeen this happen to perſons who aſcended the Alps for the firſt time. Boerhaave ſpeaks of a man who had an involuntary emiſſion, on been told that he had loſt a law ſuit. Others when much frightened have an involuntary diſcharge of urine. A young lady, who had been told that perſons of genius are never ſuperſtitious, was one day expreſſing the moſt ſovereign contempt for all the idle tales of apparitions. There happened to be of the party one of thoſe men who do not eaſily take words for things, and this perſon reſolved to put the young lady's philoſophy to a trial. He therefore faſtened a ſtring to the bed clothes, and conveying one end of it into the next chamber, in the night when ſhe was in bed and a aſleep, began to pull gently; the young lady ſtarted out of her ſleep and ſcreamed with great terror. The company came in with lights, and found her in the middle of the room exceedingly agitated, and the floor covered with urine.

Timid people are more liable than others to fall ſick. A firmneſs of mind is one of the beſt preſervatives againſt contagion. Rivinus attributed the propagation of the plague at Leipſic wholly to fear (*m*).

Willis has very well obſerved that they who fear the ſmall-pox the moſt are generally the firſt to be attacked with it. Cheyne aſſures us that fear is extremely prejudicial in all epidemical diſeaſes. Dr. Rogers remarks that fear conſtantly increaſes the ravages of a contagious diſeaſe. Baron Van Swieten has ſeen in a female patient a ſchirrous tumour of the breaſt, the firſt rudiments of which were in conſequence of a fright.

Fear is extremely prejudical to delicate people, and above all to hypochondriacal and hyſterical patients, becauſe theſe ſubjects from their exceſſive ſenſibility are ſuſceptible of the leaſt impreſſions, and

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(*m*) Dr. Z. relates in the original a very long Caſe which he aſcribes wholly to fear; but I have ſuppreſſed it, becauſe I think there can be no doubt of its having been occaſioned by infection. It relates to a lady, whoſe child was afflicted with tinea, which ſhe had careſully cleaned and attended to. One day, after having done this, ſhe ſneezed violently, and immediately fancied that ſhe was infected: A day or two afterwards ſhe had an eruption on her head, and a ſoreneſs and inflammation at the tips of ſome of her fingers. The patient was of a very irritable habit, and this complaint occaſioned many painful ſymptoms during ſix months. Dr. Z. likewiſe ſpeaks of a timid Eccleſiaſtic, who, on putting on a pair of breeches that came from a neighbouring town where the dyſentery prevailed, was ſtruck with apprehenſions of the diſeaſe, and actually experienced it in a very dangerous degree. Dr. Z. aſcribes the diſorder in this caſe alſo to fear; but I ſhould rather apprehend that the breeches were infected.

the latter are continually ſuffering from imaginary ills. Tulpius tells us of an indolent man who was rendered miſerable by reading medical books. An Hypochondriac who ſtudied under Boerhaave uſed to fancy he had the diſorder deſcribed in each lecture. The imagination of this man was indeed ſo powerful, that he commonly appeared to have ſomething like the diſeaſe he had heard explained.

Fear generally increaſes the danger and fatality of diſeaſes, diſturbs their ordinary courſe, and occaſions new and unuſual ſymptoms. It weakens the powers of nature ſo much that the diſeaſe becomes ſuperior to every remedy. I remember to have ſeen a man ill with a miliary fever, which ſeemed to be going on favorably, but a ſudden fright proved fatal to him, and he died within half an hour after it happened.

The idle ſtories of apparitions, haunted houſes, and witchcraft, which are ſo generally told to children, give them impreſſions of timidity, which they afterwards find difficult to remove, even in advanced life and with the beſt ſenſe. I could relate many inſtances of the fatal effects of theſe impreſſions both in children and adults. Some time ago I had the care of a poor woman of ſeventy years of age, who had an eryſipelatous fever which was very long and dangerous in its courſe, and was apparently brought on by the dread of an apparition. This poor woman lived in a lonely houſe which had the reputation of being haunted, and ſhe one night fancied ſhe ſaw in the perſon of a large maſtiff, the much talked of ſpirit. Her terror was exceſſive, ſhe ſhrieked out, and fell down in a ſtate of inſenſibility.

lity. When ſhe came to herſelf ſhe complained of anxiety, ſickneſs at the ſtomach, and extreme head ach, the next day ſhe had conſiderable fever, and on the day following her head was exceedingly inflamed and a great part of it covered with an eryſipelatous eruption. In other inſtances, exceſſive fear has been known to produce a tremor of twenty years continuance, cataract, loſs of ſpeech, palſy, epilepſy and even madneſs as I myſelf had an opportunity of ſeeing at Gottingen. A young man, who was a native of Brunſwick, went from Gottingen on a viſit to his father. In his way back he was attacked by three ſoldiers, one of whom ſeized his horſe's bridle and cut him over the hand with his broad ſword. He managed to eſcape however and got ſafely to Gottingen. He was extremely affected by this accident, and the next day ſpoke of his uneaſineſs with conſiderable vivacity, and complained of a pain in his throat and head. The night following he became quite furious. The third day he ſeemed to be very uneaſy in the morning, but yet he talked ſenſibly, his head ach was much diminiſhed and his pulſe was perfectly natural. Towards night he ſnatched up his broad ſword which he had with him in bed, and aimed a ſtroke at a lady who ſat near him, ſuppoſing her to be one of the Brunſwick ſoldiers. Soon after this he became more ſenſible and ſeemed to know nothing of what had paſſed. The night following he had no ſleep, but was only ſlightly delirious, complained of nothing, and ſweat pretty copiouſly. On the fourth day I found his pulſe in the natural ſtate, he had no fever, no head ach, and was perfectly tranquil and ſenſible. The perſon who ſat to take care of him being deceived by this calm, left him a little while in the evening to himſelf: the patient immediately got out of bed and finding a ſword in one of the other chambers marched out with it into the ſtreet. He threw himſelf on me and two other friends whom he happened to meet, and it was with difficulty we got him back to his bed with the aſſiſtance of ſome ſoldiers.

Soon after this he became cool and ſenſible again, and ſhed tears, when Baron Brunn related to him in my preſence what had paſſed. He continued in this ſtate all night. The fifth day I found his pulſe quicker than uſual, and this I attributed to the bliſters we had applied. His ſkin was moiſt, and he had a blueiſh circle around his eyes; he was perfectly ſenſible and compoſed, complained only of head ach, had a ſlow pulſe, and ſlept well during the night. On the ſixth day I obſerved ſymptoms of fever in him for the firſt time ſince his illneſs; he complained of great heat, but continued to be quite ſenſible: in this ſtate he remained all night. On the ſeventh day he gaped almoſt continually from ſix in the morning till ten, when he had a fainting fit, and complained of *tinnitus aurium* The night following he ſlept well, and the next day was perfectly recovered, and continued ſo during a year, ſince which time I have heard nothing of him.

Modeſty may be conſidered as a more moderate ſpecies of fear. In bluſhing there ſeems from a peculiar affection of the nervous ſyſtem to be an increaſed determination of blood to the minute capillary veſſels of the face and breaſt, and, as Baron Haller preſumes, of the whole ſkin. He mentions his having

ing ſeen a young lady whoſe whole boſom became red in certain circumſtances. His conjecture is therefore very probable. I myſelf have obſerved a ſudden ſuffuſion in the boſoms of women who had a very fair and delicate ſkin. Modeſty, when carried to exceſs, ſometimes occaſions the moſt alarming effects in women. It has ſometimes checked the catemania, and proved fatal. I have it from Baron Haller that a young lady on finding herſelf taken with the menſes in a ſtage coach was ſo extremely affected as to bring on a violent fever, of which ſhe died.

Sorrow acts either ſuddenly or by ſlow degrees, in proportion to its violence and continuance. Its objects and cauſes being different according to the degree or ſuddenneſs of any misfortune, or its being preſent, or paſt, or likely to happen, the effects of this paſſion will be various. There are not ſo many examples of fatal effects from grief as from joy, becauſe grief, altho' it diminiſhes the energy of the nervous ſyſtem, ſlackens rather than accelerates the circulation. There are ſome inſtances however, of ſudden grief having proved fatal. It is related of Diodorus Chronos who was conſidered as the moſt ſubtile logician of the time of Ptolemy-Soter, that Stilbo one day in the preſence of the king propoſed a queſtion to him, to which he was unable to reply ; the king willing to cover him with ſhame pronounced only one part of his name and called him ονος, aſs, inſtead of Chronos. Diodorus was ſo much affected at this as to die ſoon afterwards. Horace was ſo much grieved at the loſs of his friend and patron Mecenas, as to ſurvive him only nine days. Creech who had acquired great reputation by his tranſlation of Lucretius, and who was as much diſgraced afterwards by the tranſlation he put forth of Horace, was ſo much affected by his ill ſucceſs, that he hanged himſelf in order to avoid the contempt of his countrymen (*n*). I have often wondered that none of our German poets have as yet hanged themſelves.

Montaigne tells us of a German, who was killed at the ſiege of Oſen, after having performed wonders in the field; one of the general officers deſired to ſee the corpſe of ſo gallant a man, and the body being brought before him, he diſcovered in it the features of his own ſon, and died on the ſpot. Dr. Tiſſot ſpeaks of the father of a numerous family, who having loſt a wife, whom he tenderly loved, became ſuddenly aſthmatic. One of our oldeſt and moſt uninformed practitioners conceived a fancy that the ſeat of this patient's diſeaſe was in the anus, and gave draſtic purges in order to bring down the hemorrhoids. But at the end of two days the patient died, and on opening the body, the lungs were found inflamed, and the heart burſt.

It happened not long ago at London, that an Engliſhman who attended the funeral of his wife, loſt the uſe of all his limbs, and continued ſpeechleſs for ſometime afterwards. Almoſt in the very

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(*n*) Mr. Creech did indeed make away with himſelf, but not till ſeventeen years after the publication of his Horace. His death was aſcribed at the time to ſome love affair, or perhaps more properly by Mr. Jacob to his moroſe and ſplenetic temper.

moment that I am writing, Prince George Louis of Holſtein having loſt his wife, directed her corpſe to be removed from the coffin in which it was placed, into another of more coſtly materials; and when this was done, the prince kneeling down at the ſide of the coffin, deſired his Valet de Chambre to read to him ſome pages of a pious book, melted into tears, and ſoon afterwards died.

If violent grief is ſpeedy and very fatal in its effects, that which preys more ſlowly on a feeling mind, is no leſs dangerous to health. Slow and ſilent ſorrow, gradually undermines the beſt and moſt healthy conſtitution. We every day ſee inſtances of incurable diſeaſes, brought on by this cauſe. Point out to me, ſaid Cicero, a remedy for that kind of grief which carried off the amiable Octavius.

This ſlow, corroding grief, gradually deſtroys the energy of the nervous ſyſtem, the appetite and ſleep: occaſions indigeſtion; renders the pulſe ſlow, weak, and commonly unequal; the tone of the heart becoming weakened, the blood is carried ſlowly through the lungs, and would perhaps ſtop there, were not its progreſs accelerated by frequent, involuntary ſighs. In the minute veſſels of the ſkin, the circulation is likewiſe extremely feeble, and hence the paleneſs and ſadneſs of the complexion. In ſhort, the body and ſoul in this melancholy ſtate ſeem reciprocally to prey on each other.

It is uſually the ſtomach that feels the firſt effects of ſorrow. The tone of this organ being weakened, ed, the reſt of the ſyſtem very ſoon becomes affected. Indigeſtion, flatulency, colics, ſpaſmodic affection, the hemorrhoids in men, and in women ſuppreſſed catamenia or fluor albus, are the more uſual ſymptoms in theſe caſes. Some ſubjects are extremely coſtive, and hence ariſe many evils; others have a conſtant diarrhoea from the weakened tone of the viſcera, which is no leſs fatal. The bile too remains as it were ſtagnant in the liver and gall bladder, and either thickens and forms biliary concretions, or is abſorbed and carried back into the general maſs, and hence jaundice and dropſy. In theſe circumſtances the whole ſyſtem becomes extremely irritable, the mind likewiſe partakes of this ſenſibility, and men in this ſtate become exceedingly moroſe and captious.

This ſame cauſe is likewiſe the principal ſource of hyſterical and hypochondriacal affection, eſpecially in people who lead a recluſe and ſolitary life. This ſeems to be the reaſon why theſe diſeaſes are ſo frequent in monaſtic life, in country houſes at a diſtance from towns, and likewiſe in ſmall towns; men being generally the moſt troubleſome and vexatious to each other, when confined together within a narrow circle where the ſtock of ideas is conſequently ſmall, becauſe the moſt predominant of theſe ideas returning with the greateſt frequency, at length become dull and inſipid, and if they happen to be diſagreeable of themſelves, they render men moroſe and unhappy, and never fail to increaſe diſeaſes of the mind. This is perhaps the chief cauſe of the uneaſy reſtleſs diſpoſition that prevails ſo much in retired life, and in country towns, and which ſometimes precludes all other ideas but thoſe which excite diſcontent. The ancient 'philoſophers who ſo often ſaw men rendered miſerable by their own reflections, perhaps were excuſeable for aſking, with Cicero, whether the Gods could furniſh mankind with any thing more likely to render them unhappy, than Reaſon?

Zuckert, in a very excellent diſſertation on the paſſions, has with great propriety obſerved that ſolitude and indolence become in general not only the remote cauſes of many paſſions, but are more calculated than any thing elſe to nouriſh and ſupport any deeply rooted inclination, and this by confining the mind, as it were, to a circle of certain particular objects.

The uneaſineſs that is occaſioned by an extreme deſire to reviſit one's native country, is the ſource of a particular diſeaſe named Noſtalgia (*o*). This diſorder, which announces itſelf by melancholy, trembling of the limbs, and ſome other ſymptoms, ſometimes proves fatal in a ſhort time. The Swiſs are exceedingly ſubject to this diſeaſe when in a foreign country; and it has been even ſpoken of as peculiar to that people, but every day's experience proves the natives of every country to be liable to it. Barrere has ſeen it in ſeveral Burgundy ſoldiers, who were

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(*o*) This affection, which by the French is called *maladie du pays*, is deſcribed by Sauvages and Linnæus as a diſtinct genus, but Vogel and Dr. Cullen have more properly conſidered it as a ſpecies of melancholy.

forced into the ſervice, or refuſed their diſmiſſion. Dr. Auenbrucker, phyſician to the Spaniſh hoſpital at Vienna, has likewiſe frequently obſerved it in young people, who had been enliſted by force, and deſpaired of ever ſeeing their home and friends again. Theſe young ſoldiers were at firſt ſilent, languid, penſive, emitted deep ſighs, ſeemed exceedingly ſorrowful, and gradually became inſenſible to every thing. The ſame phyſician tells us that this diſorder, which was formerly ſo frequent amongſt the Auſtrian troops, is now extremely rare, ſince a plan has been adopted of enliſting ſoldiers only for a certain number of years, and giving them a diſcharge when that time is expired. I have it from ſeveral Scotch phyſicians and officers, that this diſorder is by no means uncommon amongſt their countrymen. Indeed, I believe it will be met with in men of every nation, who in foreign countries feel the want of thoſe delights and enjoyments they would meet with amongſt their friends at home. In ſhort, every Swiſs feels as I do, the *Noſtalgia*, under another name, tho' at home, whenever he thinks he ſhould live better in any other country. The Noſtalgia excites and cheriſhes the moſt ſingular fancies, which no arguments or medicines or even puniſhment can remove. The only reſource is to find out a way to pleaſe the patient, but when phthiſis has really manifeſted itſelf, even this diſcovery will be of no uſe. Dr. Auenbrucker obſerved that in ſeveral who died of this diſeaſe, the lungs were adherent to the diaphragm ; and that ſome part of the lungs was indurated, or was even become more or leſs purulent.

But when the diſeaſe has not yet degenerated into phthiſis or madneſs, wonderful effects have been produced in patients, by inſpiring them with the hope of ſoon ſeeing their friends and their home again.

A Swiſs, of the Canton of Berne, who ſtudied phyſic at Gottingen, fancied that his aorta was about to burſt, and therefore could not be prevailed on to ſtir out of his chamber ; but about this time his father ſent for him home, and he then ran all over Gottingen with the greateſt joy and alacrity, and took leave of all his acquaintance, whereas two days before this he was hardly able to get up a little ſtair caſe without being in danger of ſuffocation. His father afterwards ſent him to the Univerſity of Baſil, and from thence into the French part of the Canton of Berne, the fineſt country in Europe, ſituated along the Lake of Geneva ; here he was again attacked with the Noſtalgia : he is now in perfect health.

The febricula deſcribed by Manningham, and but little known hitherto, except in England, particularly attacks delicate women, and men of letters of an irritable habit, enervated by grief, or other means. Before the time of this writer, nobody thought of diſtinguiſhing this continued fever, from the ordinary hyſteric fever or was aware of its dangerous termination.

The paroxyſms of this fever, are exceedingly irregular. It manifeſts itſelf by a ſickly countenance, and a dryneſs of the ſkin, but without thirſt; a loſs of appetite; a very weak, rapid, and unequal pulſe; pale urine, and ſometimes in conſiderable quantity; horripilatio; ſometimes cold and viſcid ſweats; and in ſome caſes, colic pains, watchfulneſs, and ſlight delirium This fever continues thirty or forty days, according to Manningham, and unleſs ſeaſonably relieved, terminates in ſtupor and death.

Indignation ſeems to be a mixed paſſion, reſulting from anger and ſorrow. Its effects in many perſons, are to excite vertigo, nauſea, and an extreme ſtricture of the thorax. I have ſeen this paſſion, tho' not in a vehement degree, excite a ſtitch in the ſide in very delicate women of great ſenſibility: this pain, like the pleuritic ſtitch, was renewed at every reſpiration, and ſometimes continued many hours. Baron Haller ſpeaks of a lady of rank, who having ſuffered herſelf to be ſeduced by her lover, conceived ſo great an indignation after the affair, that ſhe became blind and deaf: her urine was ſuppreſſed during four and twenty hours, and her pulſe and reſpiration were, for ſome little time, ſo inſenſible, that even a mirror was applied to her mouth without being tarniſhed. This lady recovered. I myſelf have ſeen an old lady who on the leaſt contradiction felt a ſenſe of ſuffocation, and a convulſive cough, which would continue a conſiderable time unleſs ſeaſonably relieved, and I have generally done this by means of rhubarb and opium.

It would ſeem to be dangerous to check a violent indignation too ſuddenly. Valerius Maximus tells us that the wife of Nauſimenes the Athenian, having ſurpriſed her ſon and daughter in an inceſtuous commerce, became dumb at the ſight, and remained ſo during the reſt of her life. A young woman diſcovered her lover in the arms of her mother, and was ſeized with madneſs. A man of diſtinction, and of great merit both as a general and a politician, having failed in his application for ſome poſt of importance at Berne, was ſo affected with indignation as to die apoplectic an hour afterwards. We ſometimes feel the effects of indignation, when with reaſon and juſtice clearly on our ſide, we ſee ourſelves oppreſſed or deſpiſed by thoſe whom we attempt in vain to convince. This is exceedingly grating to a feeling mind, and yet there is nothing more common.

Amongſt the melancholy paſſions we may very properly include love. This acts ſuddenly and with violence, becauſe of all the paſſions it is the moſt impatient, and the leaſt ſuſceptible of controul; ſometimes, however, it is more ſlow in its progreſs, and like intenſe grief gradually undermines the conſtitution. The more general effects of this tender paſſion are a tremulous pulſe, deep ſighs, an alternate glow and paleneſs of the cheeks, dejection, loſs of appetite, a faultering ſpeech, cold ſweats, and watchfulneſs, which gradually terminate in conſumption, or perhaps occaſion inſanity. Diſappointed love, is generally ſollowed in women by a ſuppreſſion of the catamenia. I had occaſion to obſerve this effect in a Swiſs lady, in whom the ſuppreſſion continued ſourteen months. Two other young women in this country, through diſappointment in a love affair, fell into the conſumption deſcribed by Hippocrates, after a ſudden ſuppreſſion of their menſes, to which there is commonly joined in theſe caſes, a mixture of timidity and grief. The effects of love have been very well deſcribed by Richardſon in his Clariſſa.

Diſappointment in love, is likewiſe occaſionally productive of other ſymptoms. Tulpius tells us of a young Engliſhman, who having met with a refuſal from a lady, became perfectly rigid and motionleſs, ſitting in the ſame attitude with his eyes open, and appearing rather like a ſtatue than a human being; he continued in this poſture till night, and then, on being told that his miſtreſs yielded to his paſſion, he roſe inſtantly as if from a profound ſleep, became more chearful, and ſoon recovered.

Love, in the female ſubject, ſometimes excites furor uterinus when the paſſion is irremediable. Avicenna has deſcribed the nature of this diſorder in a maſterly manner. I am convinced from my own obſervations, that the picture he has given us is truly copied from nature. This diſorder, ſays he, approaches very nearly to melancholy, and is occaſioned by a woman's fixing her attention too firmly on the perſon who is pleaſing to her, and with whom ſhe often, but in vain, wiſhes to cohabit. The eyes in theſe caſes, appear ſunk within their cavities, by the conſtant motion of the eye-lids; the patient's breathing is frequently interrupted; ſometimes, on the other hand, it is accelerated; now and then ſhe is merry and laughs, but more commonly mournful and in tears, eſpecially when ſhe hears an amorous ſong, or is talked to of the abſence of the man ſhe loves. Her whole body waſtes, except the eyes, which are ſwelled, notwithſtanding their ſeeming depreſſion, and this ſeems to be occaſioned by the frequent ſighs of the patient, and her want of ſleep. All the motions of the ſoul are irregular; the pulſe is unequal, and frequently changes, eſpecially when mention is made to the patient of the object of her love. Avicenna, who conſulted nature, tells us very honeſtly, that when all other remedies fail, the phyſician muſt endeavor to bring the two perſons together; he has ſeen ſome inſtances, he ſays, of women in this way, who have recovered merely through the preſence of the object of their affections, at a time when they appeared to be in a truly conſumptive ſtate, and ſeemingly worn out by the violence of their paſſion. The concluſion he draws from all this, is the vaſt influence which the paſſions have over the body.

Envy exerts its baneful effects on us, even from our cradle. Children are obſerved to look ſickly, and loſe their fleſh, if they ſee other children more indulged and careſſed than themſelves. This paſſion robs us of our ſleep and appetite, and diſpoſes us to fever. A man, who has never cultivated his talents, ſees with an envious eye the ſucceſs of a man of genius; he becomes grave, melancholy, uneaſy, and as it were, aſthmatic, every time he ſees praiſe or rewards beſtowed on others, to which he fancies he has a better claim himſelf. The good name of theſe perſons which he endeavours to depreciate by contempt and calumny, is like a ſword ſuſpended over his head by a thread; he aims at injuring them, and is inceſſantly retorting the injury on himſelf; he never fails to be confuſed at the appearance of their good fortune, which he generally pictures to himſelf much greater than it really is, and thus is continually nurturing in his breaſt, a ſource of painful diſtreſs.

There are many perſons in the world who really owe their diſeaſes to this criminal paſſion, and theſe diſeaſes are the more dangerous, as their cauſe is very often unknown, or is diſcovered only by chance. A man in this ſtate, does not properly reflect on the alteration in his health. Solely occupied with the objects of his paſſion, and never once thinking of its effects, he would not chuſe to acknowledge it, were the cauſe diſcovered and pointed out to him. But it would be endleſs to trace all the combinations and effects of this contemptible paſſion, or of the ambition which is frequently united with it. I will only ſay, that phyſicians ought to be much more attentive than they commonly are, to the effects of this vice, which appears but too frequently every day. The ſilent, melancholy air we ſo often ſee in our patients, and the uneaſineſs and diſtreſs that do ſo much harm in diſeaſes, very often ariſe from no other cauſe than a ſecret envy, which preys upon the heart, and diſturbs all the operations both of the mind and body.

Envy and jealouſy are particularly dangerous in love. There is no evil to which jealouſy will not give birth. Ambition renders men raſh and daring and very often precipitate, but jealouſy converts them into furies and madmen. I have had occaſion to ſee all the great hoſpitals in Paris, and have diſtinguiſhed in them, three kinds of mad people. The men, who were become ſo through pride; the girls, through love; and the women, through jealouſy. All theſe people had the appearance of ſo many furies.

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## CHAP. XII.

### *Too great application of the Mind, conſidered as a remote cauſe of diſeaſe.*

THE deſire of acquiring knowledge, or of employing the knowledge we have already accumulated may very properly be conſidered amongſt the affections of the mind, becauſe in ſome perſons it is ſo predominant as to abſorb almoſt all the other paſſions.

Every man who applies himſelf to the ſtudy of truth, has an indiſputable claim to the grateful acknowledgements of ſociety; and yet nothing is more common than to ſee ſuch men deſpiſed and neglected, and the preference given to men of no merit, and who make up, perhaps, the greater number in Phyſic, as well as in every other profeſſion. They were perſons of this ſtamp, whom Horace made to ſay, *nos numerus ſumus et fruges conſumere nati.* Men in general do not ſeem to know or recollect that they owe their preſent enjoyments, and the advancement of the arts, to the labours of ſuch men as they are every day ſlighting. The ſavages of Louiſiana ſeem to have a better idea of the utility of theſe reſearches to ſociety, than the generality of Europeans. One of theſe ſavages took it into his head, to traverſe many of the Provinces of South America, with a view to ſtudy their manners and cuſtoms, and to bring back ſome uſeful knowledge to his countrymen the Yazous. In the courſe of five years, he had travelled nineteen hundred leagues, and at his return, his countrymen gave him the appellation of *Moncacht-Apee*, or *the killer of cares*. Every man who undertakes to enlighten humanity has a claim to the ſame name.

Rouſſeau has very well obſerved, that our Reaſon perfects itſelf through the activity of the paſſions: that we aim at knowing, becauſe we are deſirous of enjoying; and that it is impoſſible to ſuppoſe any one who will give himſelf the trouble to think without being induced to it through fear or deſire.

Beſides the advantages which ſociety derives from the ſciences, as being the true ſource of the arts; the ſciences will be found to afford a real advantage to the individual, in a thouſand circumſtances. Cicero who knew how to eſtimate them properly, and who was indebted to them for his elevation to the moſt diſtinguiſhed poſts of the Roman empire, has in his uſual maſterly manner, defended all their rights, and pointed out their advantages in his pleadings for Archias. But the great utility of the ſciences to individuals, is to give employment to the mind, and thus to keep off the diſquietude and vexation which are the conſtant companions of indolence, and the greateſt enemies, in my opinion, both to the mind and body.

The ſciences render life leſs animal, leſs confined to the duſt we tread on. Every idea being neceſſarily connected with one or more others, it is impoſſible for us to acquire a new degree of knowledge, without approaching nearer to that which is beyond it. One acquiſition is therefore the ſource of another, and this is the reaſon why the mind conſtantly ſeeks to extend itſelf. At the ſame time that the ſciences inform us of a certain number of truths, they ſpread a ſort of twilight on other diſtant objects, which gradually become more luminous as we advance in our reſearches. Is it therefore to be wondered at, that an active mind ſhould know no bounds? There is ſo much ſatisfaction in acquiring knowledge, that Archimedes, abſorbed by this pleaſure, did not even perceive the ſoldier who came to plunge into his breaſt the ſword which ought to have protected him.

But the pleaſure we have been ſpeaking of is felt only by much the ſmaller number. Many people affect to love literature, and to ape the man of ſcience, but few purſue it as a paſſion; and they who do attach themſelves to deep ſtudy, expoſe themſelves to a number of ills, if they do it without diſcretion. The vulgar have indeed no idea how a man, who ſits all day reading, thinking, combining, compoſing, decompoſing, inveſtigating, and writing, can exhauſt his ſtrength; and this ſooner than the peaſant who goes to plough or to ditch, and is expoſed to all the injuries of the weather; and yet there is nothing more certain than this, altho' theſe people are unable to comprehend it.

Violent and long continued exertions of the mind fatigue the body, as much as exceſſive bodily labour enervates the mind; much ſtudy, without exerciſe, weakens the body; and a laborious life, in which the mind is unemployed, gradually weakens the mind *(p)*. This is the reaſon why the moſt trifling meditation fatigues the vulgar, and why literary men are unable to ſupport the leaſt degree of bodily labour. The vulgar, whoſe ideas do not extend beyond inſtinct, can have no abſtracted knowledge, becauſe to abſtract there is required both knowledge and genius. Hard labour is what they call working; and reading, and thinking, and writing, are in their opinion, a life of idleneſs. We confeſſedly are not able to ſay in what manner a violent effort of the mind acts upon the medullary ſubſtance of the brain, and through it over the reſt of the ſyſtem; but as the brain is without doubt the medium of ſenſation and thought, it may naturally be concluded, that this will be as much weakened and fatigued by too great an application, as the muſcles of a workman or a peaſant are by handling the hammer or the plough.

It may be preſumed, that a certain motion takes place in the parts, through the medium of which

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*(p)* Seneca was of opinion, that violent exerciſe was improper for men of genius. *Nam exercitationes, quarum labor ſpiritus exhaurit, hominem inhabilem intentioni ac ſtudiis acrioribus reddit.* Epiſt. 15.

the ſoul thinks, and by which it executes its functions. It is impoſſible indeed to ſay what this motion is, but we need only obſerve the difference between a penetrating and a ſtupid brain, to be convinced of the probability of ſome ſuch motion. In a penetrating head every thing is apparently in agitation. Such a man aſſociates his ideas with extreme rapidity, paſſes with great readineſs from one object to another, diſcovers at once the affinity of the moſt diſtant things, and compares and arranges and combines them with the greateſt facility. On the other hand, the little ſtock of ideas of a ſtupid head ſeems to form one indiſtinct maſs; if I may be allowed the expreſſion. Each idea whether true or falſe when once conceived, is with theſe people an impreſſion that is deeply engraven on the brain, but without ever being ſubmitted to examination; and theſe ideas at length become ſo many barriers which oppoſe themſelves to the admiſſion of any others. Perſons of this ſtamp being but little ſuſceptible of application, content themſelves with words, and ſeem to think and act only with the multitude, or to imitate very aukwardly what they ſee or hear ſaid by others. *O imitatores ſervum pecus!*

Theſe ſeveral phenomena ſeem therefore to indicate a greater or leſs degree of mobility in the brain. Pythagoras endeavoured to excite it in his ſcholars every morning by means of muſic. This mobility would ſeem to be founded on the greater or leſs degree of ſenſibility in the brain: ſtupid people having but little or no ſenſibility, except in matters of intereſt; in all other things they ſeem to be without conception. Boerhaave is of opinion that an extreme mobility of the brain and nerves is eſſential to genius, but that this mobility cannot take place without weakneſs, becauſe the ſolidity that conſtitutes ſtrength gives too much firmneſs to the nerves.

This mobility of the brain may become the remote cauſe of certain diſeaſes when the mind applies itſelf too intenſely on any object. The great happineſs is in having the *Mens ſana in corpore ſano:* but by aiming to procure both theſe, we may ſometimes go too far; becauſe by too ſcrupulous an attention to the body we may render the mind ſtupid, or by cultivating the underſtanding we may neceſſarily weaken the body. Too great application of the mind, particularly exerts its effects on the ſtomach, the digeſtions become depraved, flatulency every day increaſes, the ſecretions become irregular and the body no longer takes its ſuitable nouriſhment. Happy, ſays Baglivi, is the phyſician who diſtinguiſhes this, becauſe he will then know the true ſource of hypochondriacal affection and meſenterical diſeaſes, and likewiſe of the rank odour of the mouth, and the different bad taſtes that affect the tongue.

There likewiſe reſults from too great application, a continual tenſion of the head, a deep melancholy and ſometimes a ſort of apathy or indifference for every thing. Dr. Tiſſot, who has naturally a diſpoſition of mind equally removed from joy and ſorrow, fell laſt winter, in the midſt of his various avocations, into this indifference and was incapable either of thought or action. The cauſe of this diſorder was in his ſtomach: his digeſtion was bad, he had alternately either vomitings or a violent diarrhoea, and in the intervals was impatient for all ſorts of food. He recovered in about ſix weeks, but ſtill had a weakneſs of the ſtomach. Mr. Moſer attributes his ill health to a ſimilar cauſe.

Celſus obſerves that almoſt all men of letters have weak ſtomachs, and on this account are pale, thin, or dull. Plutarch relates that Cicero ate but little and ſeldom, on account of the weakneſs of his ſtomach, and that he was ſo thin as to ſeem to conſiſt only of ſkin and bones. Voltaire has a triangular face, which is truly the ſymbol of perfection. Wieland's legs are like a pair of flutes. When Rouſſeau is not ſpeaking, he leans his head upon his breaſt, which is a melancholy and contemplative attitude.

In theſe circumſtances, the weakneſs of the nervous ſyſtem is conſtantly accompanied by a greater degree of mobility. This is natural to the generality of literary men, and likewiſe to hyſterical women, and in a recovery from ſickneſs. This is the reaſon why men of letters are in general ſo extremely irritable, and ſo ready to take fire.

The faculties of the mind by too great application gradually become exhauſted, and the man of letters ſometimes terminates life in the moſt melancholy manner. The continual watching, which Pliny conſidered as the means of lengthening out life, kept up a burning heat in his ſtomach and breaſt. The celebrated Bayle died a martyr to his unremitting aſſiduity. Men who have long applied themſelves to deep ſtudies, are ſometimes unable to ſupport the light; ſparkling objects ſeem to float before their eyes in the dark, and even in full day light when they look ſteadily on any thing. This phenomenon ſometimes occurs when they are the moſt eaſy and unemployed. Epicurus had ſo weakened his body by his labours, that towards the latter period of his life, he was unable either to wear any cloaths, or to quit his bed, or to ſupport the light or to look at the fire.

Fontenelle tells us that Tſchirnhauſen had often ſeen many of theſe brilliant ſparks floating before his eyes, which diſappeared whenever he looked ſteadily at them; but that they commonly laſted as long as he continued to work, when he did not attend to them. At length he uſed to ſee them in the day time on the walls of his apartment, or even upon white paper. Theſe effects are commonly the conſequence of ſtudying by candle light. They are ſometimes ſucceeded by cataract.

I myſelf experienced this phenomenon laſt year during the day-time. I ſaw brilliant ſparks, the appearance of flies, black ſpots, and different figures floating before my eyes, all which appeared and diſappeared on a ſudden. When I was in bed I ſometimes ſaw the appearance of flame. Theſe phenomena appeared both when faſting, and when I had eat; drinking wine neither increaſed nor diminiſhed them. They were firſt brought on by too much reading; I am now wholly free from this inconvenience, but dare not venture to ſtudy by candle light.

There are others who are wholly deprived of ſleep by dint of ſtudying, and thus precipitate themſelves into all the horrors of hypochondriacal affection. I was called not long ago to a lady in the country who was at length become mad after having been long in a profound melancholy. The curate of the pariſh, who happened to be with her, aſcribed her diſorder altogether to too much reading. 'It would 'ſeem then,' ſays I to him, 'that you read but 'little.' 'Very little or not at all', replied the good curate with a very moderate tone of voice, 'take 'my word for it, Sir, that all they who read much 'go mad in the end'.

It is indeed true, that our reaſon and imagination become gradually diſturbed by too intenſe an application to ſtudy, and the end of this vain wiſdom is ſometimes a real madneſs, or rather as Rouſſeau ſays, man returns to his original ſtupidity. Boerhaave obſerves, that too great application of the mind cauſes the brain to fall into atrophy; the eye ſight and hearing gradually fail, and at length a man by theſe means loſes all his internal ſenſes and becomes altogether deprived of thought. Van Swieten has frequently ſeen men of letters gradually loſe the faculties of their mind and at length die apoplectic.

A Swiſs eccleſiaſtic who had acquired much reputation by his Sermons, and was deſirous to ſupport it, read much, compoſed with great care, and took the pains to learn his diſcourſes by heart. By this great application of mind he became gradually deprived of his chearfulneſs and activity, and his memory diminiſhed in proportion as he continued to fatigue it, till at length it would admit no new ideas, altho' it preſerved the old ones. Not long after this he had a ſtroke of apoplexy, which rendered him paralytic, and he was carried to the baths at Baden in Switzerland, where he died in his forty ſecond year.

But it will be right to conſider the efforts of the mind in different points of view: thus there are ſome who exert their attention, others their imagination, and ſome again their genius. Altho' men of genius are of all others the moſt ſubject to nervous diſorders, yet we often ſee theſe complaints in people who have no pretenſions to genius, and who are ſometimes, however, as uſeful as men of genius. Theſe people hurt themſelves by exerting their attention too much.

Weak heads are ſoon rendered ſtupid by an overſtretch of the attention, becauſe ſuch people embrace but few ideas at a time, and to do this requires the whole of their little genius. The attention of a man of genius on the other hand is ſometimes ſo unlimited as to take in all the ideas of the ſubject at once.

I knew a Swiſs lady of great genius who at the age of fifteen was extremely well verſed both in Wolff and Leibnitz, altho' unable to comprehend how a ſtocking was made. I have ſeen this lady ſuddenly attacked with a convulſive cough, or with a conſiderable degree of fever in the midſt of the moſt animated and agreeable converſation.

Pythagoras who ſuppoſed a ſcience to be uſeful only in proportion as it afforded a remedy to ſome paſſion, demonſtrates by this the abſurdity of converting to a dangerous paſſion, what ought to be cultivated only to moderate the paſſions. But theſe abuſes are not peculiar to perſons of maturer life, and who enjoy all the powers of their underſtanding: we ſee them every day adopted in the education of our youth. Children are made to fill their heads with words, or are ſeverely puniſhed, and by theſe means become dull, heavy and ſtupid, becauſe inſtead of cultivating their reaſon, their maſters ſeem to aim at fatiguing and weakening their memory by their over exertions. Inſtead of teaching children to conſider and examine a thing, in order to underſtand it, theſe maſters oblige them to pronounce it fifteen or twenty times with a view to imprint it on their memory. Boerhaave ſtiled this a piteous mode of inſtruction. Baron Haller obſerves that the truth of this is but too palpable, becauſe inſtead of enabling them to analyſe a compound idea, and making them feel the due value of the ſimple ideas it includes, they teach them only the ſyllables and words that expreſs them, and thus add obſtacle after obſtacle to the improvement of the underſtanding.

This abſurd method which is ſo generally adopted, makes all the knowledge of children conſiſt not in the underſtanding, as it ought to do, but in memory. This ſeems to be the reaſon why ſo many young people who have ſhone at ſchool, make ſo diminutive a figure when they launch into the world. As the chief object of their ſtudies was to load their memories with things which as they never underſtood were ſoon forgotten, ſo they find themſelves incapable of obſerving or judging, and in general of thinking, becauſe in their younger days they had never been taught to think for themſelves. Baron Van Swieten tells us he has ſeen children of the moſt promiſing diſpoſitions rendered ſtupid and even epileptic thro' the miſmanagement of their maſters. Theſe abuſes ſeem to be the moſt prevalent in public ſchools, the maſters of which too commonly by their caprices and ſeverity ſerve only to inſpire their ſcholars with terror. I have ſeen ſome children ſo frightened at the leaſt look of their mercileſs pedagogues, as to become ſick and ſeveriſh. Amongſt others I remember a boy twelve years of age, and of a moſt promiſing genius, who was ſo terrified by the ſeverity of his maſter as to be attacked with a diarrhoea, which degenerating into dyſentery carried him off in ſpite of every remedy. This ſame maſter had five or ſix hundred ſtrokes of birch to give every week to four animals in order to purge off his bile. This was his own expreſſion.

Perſons who are not formed for abſtracted ideas, or who apply themſelves too intenſely to the abſtraction of the ideas they employ themſelves about, almoſt all of them fall into the ſtate of a learned man whoſe caſe is deſcribed by Van Swieten. This perſon was at length ſeized with vertigo whenever he ſimply liſtened to any little ſtory; and uſed to faint away whenever he attempted to recollect any thing. I was formerly in a college where philoſophy was taught in a very dry and diſagreeable manner. Some of the ſcholars who made the greateſt proficiency, and gained the moſt praiſe, became altogether ſtupid, others became ideots, and ſome few deformed. As to me I was happy enough not to learn any thing. Our profeſſor, who was a very pious well informed man, thought Wolff's writings were too laconic; he therefore employed the greater part of his time in commenting on and explaining them. In this way his courſe of metaphyſics took him up eight years. This painful application gradually brought on a deep melancholy, tho' before this he had enjoyed a very good ſtate of health, had lived very regularly, and was of a chearful temper. By degrees he loſt his ſtrength, became pale and thin, read phyſical books, took medicines without diſcretion, and thus weakened himſelf the more, till at length he was wholly without ſleep, and after falling into an inſanity which continued a few days, died.

No employment of the mind is ſo fatiguing as that which is purſued with reluctance or diſtaſte. I have experienced this in my own perſon. I was intended for the bar, but could never hear the propoſal ſeriouſly mentioned without being in a cold ſweat. A man who reads a book for which he has no taſte, or who writes any particular parts of a work with diſſatisfaction, gets through them indeed, but not without a certain inconvenience or fatigue of mind. His head grows heavy, he gapes, blows his noſe, rubs his forehead, bites his nails, and reads without thinking. This is the reaſon why we forget ſo much of what we read, and why we are ſo often without thinking, or in that ſtate of mind which the Engliſh call Swiſs meditation. It is on the ſame principles likewiſe that we may explain why works of genius are ſo unequal; ſtriking and beautiful in ſome parts, and very different in others.

Of all the occupations of the mind, that in which the genius is creative, as it were, would ſeem to be the leaſt hurtful, and this on account of the pleaſure that accompanies and follows the invention. Sanctorius has therefore very well ſaid, that impaſſionate ſtudy fatigues much ſooner than that which is purſued through inclination.

Men fall into different extremes, when the imagination is kept too long on the ſtretch. Muſicians and painters have in all ages been proofs of the extravagances into which an overheated imagination may lead men. Poets have very often been the victims of their enthuſiaſm.

I think it right in this part of my work, to inform ſuch of my readers as may have had no opportunities of experience in theſe matters, how extremely powerful and irregular the imagination becomes in matters of religion. Not that I pretend to blame any particular ſect or communion, and ſtill leſs to criticiſe religion. I mean only to hint at thoſe abuſes which merit the attention of a phyſician. It is melancholy to ſee ſo many perſons of both ſexes affected in this way. Women of a very lively imagination and confined genius are the moſt commonly ſuſceptible of theſe impreſſions. Baron Haller in his Phyſiology tells us that a ſuperſtitious piety is a very frequent cauſe of inſanity, eſpecially in ſuch as picture to themſelves the moſt terrible notions of a future ſtate. This idea, accompanied by fear, returns ſo often and forcibly, as to produce at length the ſame conviction and certainty as if it had really paſſed into the mind through the medium of the ſenſes.

Theſe wanderings of the imagination are in a great meaſure occaſioned by the ſenſes. The greater number of theſe patients being devoted from their earlieſt life, to a mode of life for which man certainly is not intended, are conſtrained by their ſituation to oppoſe the greateſt reſiſtance to ſenſes which acknowledge no other maſters than the laws of nature. A body nouriſhed in indolence, and nerves which are the more irritable by being always in conſtraint, keep up a continual fire, concealed indeed under the embers, but which blazes forth from time to time with the greateſt violence. The mind always intent on, and devoured as it were by the appetite of the ſenſes, changes, it is true, the direction of theſe involuntary and violent motions, but this is done at the expence of reaſon; and the impetuous orgaſm of the ſenſes ſoon becomes the cauſe of fanaticiſm and mania. The greater part of the works publiſhed by theſe diſordered minds abound with the moſt laſcivious ideas, wrapped up indeed in a myſtical garb, but which ſufficiently indicate the nature of the diſeaſe. I have often been confirmed in this opinion by the behaviour and converſation of the patients themſelves. Thus a lady who was penetrated with theſe pious ideas, uſed to call out in her hyſteric paroxyſms, "My ſoul "feels this amiable ſpirit which inflames every thing, "which devours every thing by the gentleſt fires". Another would be in extacy, immoveable and inſenſible. She would be penetrated with this holy love, and a new life would diffuſe itſelf through all her limbs. Sometimes ſhe would call out in her paroxyſms, " Come then along with me and let us " call love. I can never talk of him enough". Theſe were ſurely caſes of furor uterinus (*q*).

This pretended ſpiritual love conſumes the body more than if the patients really gave themſelves up to the appetite of the ſenſes, becauſe the orgaſm which excites it laſts continually. I have obſerved that many of theſe unhappy people have become hypochondriacal, hyſterical, ſtupid and even maniac. One patient after raving with this love, and burning with an inward fire, was ſometimes attacked with the moſt painful ſpaſms, and ſometimes with ſtupor, till at length ſhe ſpit blood, became blind, dumb, and ſoon afterwards died.— Some have died conſumptive, others have become paralytic.

How is a phyſician to act who is called to a patient in this way, and whoſe ſkin he finds perhaps as dry as parchment, as was the caſe with Biſhop Huet's ſiſter, who was ſo devoted to this myſtical love, as to abſtain from water and every other liquor. The Biſhop tells us that this was the cauſe of her death. A phyſician will be an idle ſpectator unleſs he is aware of the wanderings of the imagination in theſe caſes. Theſe diſorders very often

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(*q*) Dr. Z. gives many other caſes in the ſame way of women penetrated with this myſtical love which is ſo well ridiculed in the New Bath Guide.

make their appearance on a ſudden, in perſons in whom one would the leaſt expect them. Perſons of the beſt and ſoundeſt underſtanding have not been ſecure from theſe misfortunes. A diſappointment, a reverſe of fortune, an injuſtice have ſometimes given riſe to theſe melancholy effects. They are particularly frequent in courts where women ſeem diſpoſed to give into theſe reveries, when they grow old and ceaſe to be admired. It was through a ſudden diſorder of the imagination, that Swammerdam committed his learned works, which had coſt him ſo much pains, to the flames, and entered into all the wildneſs of fanaticiſm.

It is inconceivable how many complaints originate in monaſtic life, from the religious exerciſes to which the different orders are ſubjected. The nuns ſeem to give into theſe extravagances much more eaſily than the men, on account of their greater delicacy and irritability. The effects of theſe ſpiritual reflections are a heavineſs or dizzineſs of the head, paleneſs, weakneſs, palpitation of the heart, fainting fits; till at length, when the imagination is diſordered to a certain degree, all diſcernment and judgement ſeem to be at an end, and theſe unhappy people become, in the true ſenſe of the word, viſionaries.

All profound meditation, whether in matters of ſcience or religion, is hurtful to health. The attention which may be conſidered as the mother of the ſciences, relaxes after a certain time in ſpite of ourſelves: the mind relaxes with it and our body becomes weakened at the ſame time. This relaxation is always ſucceeded by an extreme irritability. The penetrating Mr. Kloechof obſerves that a mind intent on inveſtigating and comparing and diſtinguiſhing uncommon and very complex ideas, and which aims at taking in every thing, and extending the limits of any particular ſcience, at length becomes delicate, diſtruſtful, timid and iraſcible.

All deep meditation requires the mind to dwell a long time on the object of our inquiries, in order to analyſe all its parts, to conſider each of theſe ſeparately, and the affinity they may have to the whole. The mind muſt not ſuffer itſelf to be turned aſide from this inquiry by any idea that is foreign to the ſubject, and this is the reaſon why ſuch reflections are the frequent guide to melancholy, in which one idea abſorbs all the reſt. Carneades avoided all publick entertainments, and was inattentive to all the common concerns of life, even to eating, till at length his miſtreſs was obliged to cut the meat into morſels, and put them into his mouth. Plutarch tells us that Archimedes mixed with ſociety only by force as it were. If he was alone, he employed himſelf in tracing geometrical figures on his fire hearth, and even on his body when it was anointed with oil. Vietus buſied with his calculations was ſo abſorbed as to forget to ſleep and during three days neither eat nor drank, but ſeemed inſenſible to every thing. Varignon was aſtoniſhed every morning when he was told that the night was paſt. Sir Iſaac Newton fell into a melancholy, which deprived him of all thought; his friends recovered him from this ſtate, only by preventing his ſitting alone, and converſing with him on agreeable ſubjects. La Caille was always ſo abſorbed in his reſearches, that he never could ſay two words in converſation. La Fontaine neither heard nor ſaw any thing when employed on his great moral truths.

The mind which has a tendency to melancholy, begins by feeling the vivacity I have already deſcribed; this is ſucceeded by a continual watchfulneſs, and ſometimes by pains which are not eaſily defined. Boerhaave, after having meditated on ſome particular ſubject from morning till night, was ſix weeks without ſleep: every thing was indifferent to him: his mind was inſenſible to every thing: at length he began to feel pains in every part of his body, which he explained by ſuppoſing that the vital ſpirits were returning through their uſual channels, in order to be diſtributed through the body. It is indeed an eaſy matter to be deceived in the explanation of ſuch obſcure ſubjects; but this idea of Boerhaave ſeems to me to be the more worthy of attention as I have obſerved in palſies that ſucceed apoplexy, that this inſupportable pain is ſometimes felt in the diſeaſed limbs previous to a change for the better.

Too great application is ſometimes fatal to men of learning who are not ſuſceptible of great paſſions. In my younger days I ſtudied Hebrew under a Swiſs profeſſor to whom I may with truth give the epithet of an extraordinary man, not only with reſpect to his erudition, but likewiſe his genius and manners, and general character. He ſpoke almoſt all the modern languages with the graces peculiar to each; and poſſeſſed in a ſuperior degree, the principal Oriental languages, particularly the Arabic. Every branch of literature ſeemed to be familiar to him. He was critically verſed in the hiſtory of all ages and nations; he was acquainted with their philoſophy, their theology, their politics, and never forgot any thing he had once read. This unbounded erudition, was heightened by the moſt exquiſite philoſophical genius, which knew how to arrange and combine every idea with preciſion. In ſhort, his knowledge, his taſte, his creative genius, his luminous ideas, the beauty, the clearneſs, and the elegance of his ſtyle, would certainly have entitled him to a place amongſt the writers of the firſt rank; but he never publiſhed any work.

This Swiſs divine, who might be ſaid to unite an entire world within himſelf, had no other paſſion but the love of ſtudy. His conſtitution was exceedingly robuſt, and his health unimpaired till within a year before his death. His body was well formed, his face was of a dark complexion and thin, he eat much, and chiefly food of difficult digeſtion. In the article of drink he was very temperate. A year before his death he began to feel ſlight defluxions, to which however he did not ſeem to pay any attention. About ſix weeks before his death he began to complain of real illneſs; he had a little irregular fever, violent head ach, ſometimes on one ſide of his head only, ſometimes in every part of it, but which commonly went off in a few hours. He likewiſe complained of hypochondriacal tenſions of the thorax and abdomen, and had no inclination to eat: he had diſturbed ſleep, and his mind ſeemed to be ſometimes a little abſent.

The phyſician who was called in, was of opinion that the complaint was ſeated in the inteſtines, and recommended an infuſion of carduus benedictus; but this not ſucceeding, he had recourſe to ſome gentle purgatives. The patient thought himſelf better, and undertook to preſide at the publick examination of his ſcholars. The whole aſſembly remarked that this wonderful man, who had always ſpoken with ſo much elegance and preciſion, became prolix, and even flighty in what he ſaid, tho' he ſtill continued to ſpeak excellent latin. He was therefore perſuaded to deſiſt, and go home, as being too ill for buſineſs. The moment he got into bed he grew worſe. He complained of intenſe head ach,, and was ſeldom in his proper ſenſes. He ſpoke but little, and this, contrary to his uſual cuſtom, was in latin. He had a feeble, ſickly, yellow countenance, and got but little ſleep. In theſe circumſtances, his brother was of opinion that the ſeat of the diſeaſe was in the head, and that the phyſician had miſtaken the caſe. Dr. Ith was therefore called in, a man of great penetration, who had been employed as phyſician to the Pruſſian army, by a Prince who does not meaſure a man's abilities by his beard. This gentleman diſcovered the ſeat of the diſeaſe. He preſcribed ſtrong purges, but without effect; and likewiſe very ſtimulating clyſters, which were equally inefficacious: at length a cathartic was given, of ſtrength ſufficient to purge ſix ordinary men, and this had a wonderful effect. The diſorder diminiſhed conſiderably. The patient recovered his reaſon and his ſenſes. Still however, his mind indicated a conſiderable degree of weakneſs in the medullary ſubſtance.

From that time he took only a diſh of chocolate every day, and drank a little of the Weiſſembourg waters, but was not able as yet to get out of bed. They began now to have hopes of his recovery, but he ſoon relapſed again into ſtupidity. Some good woman recommended to him the Halle eſſence, and this compleatly diſordered his ſenſes again. Dr. Ith again adviſed the uſe of ſtrong purges, and theſe had a good effect: he was almoſt wholly reſtored to his reaſon again; his appetite returned, and his evacuations were natural and eaſy. But ſoon after this he became wholly deprived of ſenſibility, and all his functions were confuſed and at length at an end. He died in his 52d year, after having been an entire week, without affording any one mark of a reaſonable being.

Dr. Ith opened the body of this man who had been ſo uncommon an inſtance of the extent and depth of the human underſtanding. He found the cranium very thin, and the brain, with its poſterior part, of a moſt unuſual bulk. The veſſels of the dura mater, and eſpecially of the Falx, were much diſtended. Between the dura and pia mater, and between the latter and the tunica arachnoides, Dr. Ith found about two ounces of water; ſeven or eight ounces in the lateral ventricles; an ounce and a half in the third, and as much in the fourth ventricle. Thus the cauſe and nature of the diſeaſe were plainly demonſtrated. It was this accumulation of water that converted the moſt exquiſite genius into an animal, in the true ſenſe of the word.

All theſe obſervations prove to us the danger that may ariſe from too great application of the mind, eſpecially in perſons of a retired and inactive life; how ſimple it is for men to deſtroy themſelves for the ſake of immortality; and how much better it is with reſpect to health to be deſtined by providence to fell timber in the foreſt, than to have too much taſte for letters. Rouſſeau praiſes the invention of him, who on the banks of the Ooronoko, preſſed the heads of new born children between two boards with a view to flatten and lengthen them, and thus preſerve them from genius. If nature, ſays Rouſſeau, intended us for health, meditation is contrary to nature; and a man who is abſorbed in his reflections is therefore a degenerated animal.

## CHAP. XIII.

### *Of the Obſervation of many external Things which are not included in the ſix Non Naturals.*

CLOATHING, in civilized countries, is become as it were one of the firſt wants of men. In general however men dreſs more with a view to ſhow their cloathing, than to defend themſelves from the inclemency of the air. The exceſſive deſire of leaving ſome part of the body uncovered, is become as it were a right which ſociety ſeems with one conſent to have granted to the women. The ladies, in Louis the XIVth's time, diſplayed their bare ſhoulders; many of them now ſhow as much of their arms as poſſible. In moſt of the countries of Europe, the ladies, not ſatisfied with covering their boſoms with a thin gauze, diſplay it without bluſhing, and without even thinking of the bad conſequences that may reſult to their health from this. In Peru, women dreſs in ſuch a manner as to diſcover at every ſtep, what the female of the Orang-Outang conceals with her paw. I am aware that the cuſtom of going with the breaſt uncovered,

covered, prevents women in general from being affected by the impreſſions of the air, but there are always ſome who ſuffer by it, and I have ſeen it prove fatal to ſeveral. The preſent ſyſtem of dreſs in girls, ſeems principally calculated to form a fine breaſt. Their ſtays are tightly laced below, that the circulation above may be the more free. In ſome countries the women uncover their boſoms only on days of ceremony, and this is frequently attended with dangerous effects. This cuſtom therefore ought to be wholly prohibited, or the women ſhould be allowed to diſplay their boſoms throughout the year.

But the abſurd uſe of ſtays ſeems to have a particular claim to the attention of the phyſician, becauſe it is evidently productive of many evils. The uſe of ſtays ſeems to have been adapted with a view to give a fine ſhape, but there is ſo little truth in this, that in London, where one ſees the fineſt ſhapes, young girls wear no ſtays (*r*).

I have ſometimes met with delicate women who were obliged to wear ſtays, in order to give them a proper ſupport, but then their ſtays were ſoft and pliant, and moderately laced. Tight lacing in general occaſions pains of the ſtomach, ſuppreſſion

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(*r*) I ſincerely wiſh that this obſervation were well founded. We ſeem indeed to have laid aſide the cuſtom of tight lacing, in children and very young girls; but the Engliſh women in general, are perhaps more tightly laced than thoſe of any other country in Europe.

of the menſes, hyſterical affection, fainting fits, low ſpirits, difficult labours, and a variety of other complaints. I never undertake the care of any lady in theſe complaints without ſhe gives up her ſtays, or laces them very looſely. Ruſſel tells us that the women at Aleppo wear no ſtays, and this, together with the great uſe of baths, ſeems to be the reaſon why the Syrian women have very eaſy labours.

Women are in general more attentive to their beauty than their health; I thereſore pity them whenever by cuſtom or a religious ceremony, they become obliged to wear a ſort of ſtays that affects at the ſame time both their beauty and their health. This barbarous cuſtom prevails in many parts of Switzerland, where a woman cannot appear at church without this ſormidable cuiraſs. There are ſome places in which the ſtays worn by the women render them deformed. In a certain town in Switzerland, in which Rouſſeau has met with an apologiſt, the women are obliged, through a pure ceremony of religion, to be harneſſed in a machine made of large iron bars, and which is ſoftened by the name of ſtays. A young lady of that place ſollicited the magiſtrates not long ago for leave to appear at church without this cumberſome appendage, which occaſioned pains of the ſtomach and an hyſterical affection. The requeſt was granted, but not until a pious and conſcientious phyſician had given in an atteſtation in ſavour of the young lady, and the ſum of nine hundred guldens (ſ) had been paid

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(ſ) A gulden is equal to two ſhillings and ſixpence.

into court. This being the uſual fee for an exemption which is but very ſparingly granted. It is obſervable that pregnant women who are unable to ſupport this harneſs, are therefore excluded from the church.

Men in general wear too much cloathing; they aim at ſecuring themſelves from cold by this method, whereas it only tends to render them more ſuſceptible of its impreſſions. We ſeem to have borrowed from the Engliſh, the uſe of flannel under waiſtcoats, which were ſo much and ſo juſtly condemned by Cheyne, becauſe they increaſe the inſenſible perſpiration. Habit, however, is to be chiefly attended to in matters of this ſort. Men who have accuſtomed themſelves to go warmly cloathed, ought not to lay aſide their winter dreſs till late in the ſpring, and reſume it again early in the autumn, otherwiſe in the latter ſeaſon they will be ſubject to colds and cough and diarrhoea; and in the ſpring to inflammations of the breaſt. We ſhould attend likewiſe in certain circumſtances even to our bed cloaths, and to the change of linen.

Baron Haller has ſeen a fatal ſuppreſſion of the lochia brought on, the ſecond day after delivery, by an imprudent change of linen. This might happen through the dampneſs of the linen, care ſhould therefore be taken to have it well aired and then it may be changed without any inconvenience.

Notwithſtanding theſe reflections, it muſt be allowed that too ſcrupulous an attention to a thouſand things of this kind would be ſuperfluous. Phyſicians may preach up the doctrine of health, and lay down precepts for long life, but men will never be perſuaded to change their mode of life. Beſides, a phyſician in theſe matters may be ridiculouſly minute, and attribute things to cauſes which have no ſhare in the effects he is conſidering. This minuteneſs is ſometimes a cloak to ignorance. Thus I know a certain phyſician who has more reputation than learning, and who by his little talents and chit chat is extremely well calculated to pleaſe the women. He can aſcertain with great gravity the proper thickneſs of a glove, or the weight of a fan; or what ſort of handkerchief is beſt for the neck, or what kind of ſtuff is the beſt for ſhoes and to prevent chilblains, or how many pinches of ſnuff ought to be taken in a day.

The too frequent uſe of the hot bath is extremely hurtful. Hippocrates has laid down a very good rule, with reſpect to the heat of the bath, which has been too much overlooked. The hot bath, ſays he, ſtrengthens, if the natural heat of the body exceeds that of the bath; but it weakens, whenever it exceeds the natural heat of the body.

Proſper Alpini has obſerved that the Egyptians are as much enervated by the abuſe of the hot bath, as by the pleaſures of love. As I live within a league of the baths of Habſbourg, which have been long celebrated for their ſalutary virtues, I have had frequent opportunities of obſerving the effects of warm bathing, and am full convinced of the truth of the obſervation I have juſt now quoted from Hippocrates. I have found them very prejudicial to weakly, delicate perſons, when uſed too hot, whereas they are exceedingly ſtrengthening when uſed in the manner preſcribed by Hippocrates.

Short, tells us that the cold bath does good only when it is ſucceeded by a glow of heat and a ſlight ſweat; and that whenever we feel a ſenſation of coldneſs after bathing, we ought to abſtain from it. This obſervation ſeems to be well founded, and is equally applicable to the hot bath.

We may claſs the ſmells amongſt thoſe external things which occaſionally influence the animal oeconomy. Linnæus has perhaps carried this matter too far, yet there can be no doubt but that many ſmells act in a determinate manner, and on ſome ſubjects much ſooner than others. It is indiſputable that ſaffron contains a volatile principle which excites involuntary and exceſſive laughter. The ſmell of muſk occaſions faintneſs in delicate perſons, and that of aſafœtida has as oppoſite a quality. The ſmell of bean flowers, roſes and apples, and in general all agreeable ſmells are hurtful to hypochondriacal and hyſterical patients. But there will be many exceptions to this rule.

Ladies of faſhion are ſometimes ſhocked at any particular ſmell, merely becauſe it is too common. What is called good company eſtimates things only in proportion as they are above the reach of the vulgar. The ſame ſmells which occaſionally give women the vapours, are likewiſe ſometimes the means of removing them. Formerly, Hungary water was in great vogue, and the women would never have laid it aſide, had there been any truth in the aſſertion, that Elizabeth, Queen of Hungary, preſerved her beauty by it even to her eightieth year. Boerhaave ſays that many women in Holland loſt their ſmell by the too great uſe of this water; and indeed the ſame thing may happen from the abuſe of any kind of perſume.

With reſpect to ſome particular ſmells I am almoſt in the ſame predicament with Ariſtippus. That philoſopher loved perſumes, and was thereſore conſtantly abuſing the ſops who were loaded with them, and who were the occaſion of his not uſing them himſelf. The ſuperficial reaſoners amongſt the Greeks, as with us, were too apt to argue *a minore ad majus*; and from a perſumed coat to the wearer of it.

The external things which may be conſidered as the remote cauſes of diſeaſes, are in a much greater number than would at firſt ſight be imagined. I have contented myſelf with pointing out ſome of the more ſtriking of them, and a prudent phyſician will learn to diſtinguiſh any other varieties that may occaſionally occur.

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## C H A P. XIV.

### *Of the ſtate of the body, conſidered as the remote cauſes of diſeaſe.*

BY the remote cauſes of diſeaſe which have their ſeat in the body itſelf, we underſtand every inherent quality of the body, by means of which it may become ſick. All the cauſes we have hitherto diſcribed, are of the claſs of occaſional cauſes. Thoſe which we are now about to mention, are the predisponent cauſes. It is by means of theſe that we become ſuſceptible of the impreſſions of the occaſional cauſes. The beſt writers on Pathology conſider this diſpoſition as conſiſting in the connexion and coheſion of our ſolids; in the quantity and mixture of our fluids; in the number, the delicacy and complication of veſſels of every kind; in a ſuperficies which affords innumerable pores open in every part; in a ſenſibility and conſiderable mobility; in that harmony of motion which conſtitutes the general baſis of our functions; in the correſpondence and ſympathy of all the active parts of the body; and finally in the common and invariable laws of union which prevail between the ſoul and body.

This diſpoſition of body, to which I will give the name of conſtitution, varies in general according to the age, ſex and temperament; and likewiſe according to certain ſingularities of nature, who ſometimes deviates from her ordinary courſe.

I ſhall therefore proceed at once to the conſideration of this diſpoſition in individuals, becauſe from theſe we may be enabled to generalize. And firſt we ſhall obſerve a prediſpoſition to ſome diſorders, more than to others, according to the diverſity of age. In infancy, there is a much greater degree of irritability than in more advanced life, and this is the reaſon why convulſions are ſo frequent in the diſeaſes of children. The mere acidity which is met with in the ſtomach and inteſtines occaſions convulſions in infants, tho' in adults it may excite only cardialgia. The greater number of children die with convulſions. The negro children are ſo extremely irritable, as to be obliged to be ſhut up in ſome warm place during the firſt nine days, becauſe they are infallibly ſeized with a locked jaw which carries them off, if they are expoſed before that time to the freſh air.

Children two years old, beſides a general want of ſtrength, have a particular weakneſs of the ſtomach and inteſtines. They eat immoderately, and digeſt badly; and this ſeems to be the reaſon why a corrupted matter is ſo eaſily accumulated in their inteſtines, and becomes the ſource of worms and obſtructions of the meſentery. Their limbs, which are as yet extremely weak and tender, become ricketty; the blood and humours become depraved and a variety of ills take place, which are with difficulty referred to their true cauſe. Hectic fevers are amongſt the moſt frequent of theſe complaints; as are likewiſe cutaneous diſeaſes, in which I have frequently obſerved purple ſpots which afterwards become violet, brown, or yellow, and diſcharge an acrid ichor, and which give way only to gentle evacuants, and ſuch remedies as reſtore the digeſtion.

The cutaneous diſeaſes with which children are attacked, ſometimes render them deaf and blind if they are improperly treated. They are likewiſe ſubject to tinea, the matter of which, if abſorbed and carried back into the ſyſtem, excites cough and phthiſis pulmonalis; and if repelled by any improper applications becomes very often the ſource of the moſt violent convulſions, and even death.

Youth are ſubject to the moſt violent diſeaſes on account of the increaſe of their ſtrength, the increaſed motion of the blood which reſults from this, and the greater and more extenſive play of the paſſions at this time of life. They do every thing with vehemence and always go too far. Every thing ſeems to expand itſelf in them at once, and to tend with precipitation either to vice or virtue; and this is perhaps the reaſon why their diſeaſes, their vices, and their virtues make ſo rapid a progreſs and are ſo difficult to be checked.

Strength is more particularly felt in manhood, if it has been carefully managed during youth. But there are but few young people who attend to this: The ſallies of youth tend to embitter the cup of life, but in general it is only in a more advanced age that they are felt and reflected on. In manhood we become more reaſonable, but on this very account we are leſs diſpoſed to joy. It is at this time of life that hypochondriacal complaints advance very rapidly, and with all the horrors that accompany them; diſcontent and uneaſineſs then begin to prey on our minds, and we learn to prefer the hour of death to that of our birth. It is then that we begin to acknowledge that the Thracians had reaſon on their ſide for weeping at the birth of a child, and rejoicing at the funeral of their friends. In general we are the moſt ſerious when we think the moſt, and the diminution of joy ſeems to be in proportion to the number of our years, and is the moral conſequence of the perfection of our reaſon.

In old age, (*t*) the ſolids begin to ſtiffen, and their elaſticity of courſe to diminiſh; they can therefore no longer exert the ſame energy on the fluids, and the

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(*t*) " As we approach to old age rigidity begins to be in " exceſs, and the fluids bear a much leſs proportion to the ſolids " than before. The diſſipation of the body is greater than " the ſupply of nouriſhment; many of the ſmaller veſſels be" come gradually impervious; and the fibres, loſing their moi" ſture and elaſticity, appear flaccid and wrinkled. The lillies " and the roſes diſappear, becauſe the blood and the lymph, by " which they were produced, can no longer reach the ex" tremities of the capillary veſſels of the ſkin. As theſe changes " take place, the nervous power being proportionably weakened, " the irritability and ſenſibility of the body which were formerly " ſo remarkable are greatly diminiſhed; and in advanced life, the " hearing, the eye ſight, and all the other ſenſes become gradually " impaired". Simmons's *Elements of Anatomy and the animal Oeconomy*. Page 333.

circulation will of courſe (*u*) become inert. This ſeems to be the reaſon why acute diſeaſes are ſo dangerous at this time of life, nature being unable to effect a ſalutary criſis through organs which are no longer able to obey her. On this account the cure of old people is almoſt always to be conſidered rather as the effect of the phyſicians art than of nature. Chronic diſeaſes are likewiſe more obſtinate in old age than in younger life, and for the ſame reaſons. The phyſician can therefore entertain but feeble hopes of his patient at this period; eſpecially when worn down by ſighs and diſcontent, an old man drags the load of life with reluctance, and feels only the ſordid inclination of avarice, the frivolous regret of the time paſt, and the horror of an approaching death.

The ſexes have likewiſe their particular diſeaſes, but women are found to have more diſeaſes than men; for if we except the diſeaſes peculiar to the male organs of generation, the women will be found to have all the other diſorders, together with a variety of others, to which females are ſubject, as well on account of the organs which diſtinguiſh their ſex, as the delicacy of their organization, and mode of life. Their fate is therefore more lamentable than ours; and a phyſician ought to apply himſelf in a particular manner to the ſtudy of female diſeaſes. Theſe may be diſtinguiſhed into thoſe of young or

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(*u*) As the fluids become leſs in proportion to the ſolids, their acrimony is found to increaſe; and this may perhaps compenſate for the want of fluidity in the blood by diminiſhing its coheſion.

unmarried women, pregnant women, lying in women, women who give ſuck, and old women ; and all theſe, excluſive of the diſeaſes common to the two ſexes. The diſorders to which the female ſex are more generally ſubject in conſequence of the delicacy of their organization, are hyſterical affections, melancholy and madneſs. I hope ſome day or other to give a work on this ſubject, founded on my own obſervations.

Lucian, who was ſo elegant and ingenious a writer, obſerves very properly, that women are more ſubject to diſeaſes than men, on account of the greater weakneſs and delicacy of their organs ; but above all to madneſs, becauſe their levity and inconſtancy tranſport them the more readily beyound the bounds of reaſon.

A peculiarity of temperament will be found to afford the moſt occaſions of being ſick. I have already obſerved, that by temperament, I underſtand that conſtitution of the brain and nerves according to which a man feels, thinks and acts, in as much as when left to this, he thinks and acts according as he feels. Thus then temperament will give riſe to diſeaſes, in conſequence of the different degrees of ſenſibility and mobility of the brain and nerves, peculiar to each individual. So that a man will be diſpoſed to any particular diſeaſe when by the aforeſaid ſenſibility and mobility, the occaſional cauſes are enabled to act with more quickneſs and energy on his body than on that of another.

It appears therefore how much the power of the occaſional cauſes may vary, according to the greater or leſs ſenſibility of temperament. A thick and humid air immediately enervates perſons of great ſenſibility, whereas a ſerene and elaſtic air, as ſuddenly reanimates them and renders them gay and active. Theſe people perceive in the morning, before they riſe what is the temperature of the air. This ſtate of the air is announced in ſome people by a very agreeable ſenſation of coldneſs at the noſe. Would it be ridiculous therefore to ſay, that ſuch perſons ſmell the fine weather? But all temperaments are not equally ſenſible to this impreſſion of the atmoſphere. A man who has but little ſenſibility or who enjoys good health is equally unaffected by the obſcurity, or the thickneſs, or the humidity of the air, as well by its clearneſs, dryneſs and ſerenity.

I very often draw concluſions as to a man's temperament from his noſe. The nerves are ſo ſpread there, that the more ſenſible a man's noſe is, the more ſenſible will be his temperament. Nothing but habit or ſome ſingularity of nature, or vice of the imagination, or diſeaſe of the nerves can weaken my reaſoning in this reſpect. The ſubtile Cardan did right to conſider an acuteneſs of ſmell, as the mark of a penetrating genius and lively imagination, and capable at the ſame time of ſupporting them. Baron Haller is not affected by the ſtench of a cadaver, becauſe he has been ſo long accuſtomed to diſſection; but I have obſerved that he diſtinguiſhes, at the diſtance of ten yards, the perſpiration of old people which is hardly ſenſible to any others beſides himſelf. This great man likewiſe ſmells the apples that are ſhut up in his neighbour's houſe. He deteſts cheeſe to ſuch a degree as to have told me one day, at Gottingen, that he had not yet dared to open ſome books that were ſent to him twelve years before this, in a box which had a green cheeſe in it. Groſe tells us that the Bramins, who altho' they enjoy good health, are extremely delicate and have great ſenſibility of ſmell, ſo as to be much more affected by perfumes than we are: he adds that their taſte (*u*) is likewiſe ſo exquiſite that they chuſe the water for their common drink, with the greateſt care. Indeed this is a part of their luxury.

The negroes of the Caribbee iſlands follow a Frenchman by the ſmell. We are not to ſuppoſe that this faculty is given them to make up for the deficiency of reaſon, becauſe many of them have a great deal of genius. This delicacy of ſmell is rather to be aſcribed to their ſober and ſimple life. There are many inſtances, in proof of this, of Europeans as well as Negroes, who by a change of regimen have been deprived of the acuteneſs of their ſmell. Rouſſeau has done right to ſtile ſmell the ſenſitive organ of the imagination; becauſe it agitates the brain and nerves more than any other, tho' it exhauſts them in the end.

They who have ſo delicate a noſe, and of courſe ſo great a ſenſibility of temperament have likewiſe a proportionate ſenſibility at the ſtomach. This is the reaſon why great wits become ſtupid after a full meal, becauſe they find themſelves incommoded and even in pain, at a time when a fat Monk feels nought but pleaſure and delight. They who invite men of wit to their table, therefore, to enjoy their

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(*u*) There is obſerved to be a remarkable affinity between the ſmell and the taſte.

good qualities, muſt be careful to feed them moderately.

A Frenchman, poſſeſſed of a great ſhare of genius and perfectly well bred, appeared at St. Peterſburgh, and ſoon acquired the reputation due to his merit. The empreſs Anne Iwanowna expreſſed a deſire to ſee him, and he was accordingly introduced at court. The Frenchman appeared before this princeſs with all the ſilent reſpect due to ſo much ſuperior rank; the whole court expected with impatience that this man whom they conſidered as a pure compound of wit ſhould ſay ſome clever things; but only two or three indifferent words eſcaped him. At length the empreſs herſelf became impatient and told him to begin. But wit and genius are not always at the command of thoſe who poſſeſs them.

Every bodily pain is exceedingly acute to perſons of a very delicate temperament, unleſs long habit has accuſtomed them to ſuffering. The ſoul partakes of the ſame ſenſibility in theſe people, and he who ſuffers extremely from a ſlight wound, will ſuffer equally from a diſagreeable idea. This ſeems to be the reaſon why all the paſſions act with greater violence in very ſenſible people, and even at the expence of their greatneſs, relatively to their other preeminent qualities. Demoſthenes was very thin and delicate in his youth; his mother was therefore unwilling that he ſhould apply himſelf too much, nor would his maſters oblige him to ſtudy. Perhaps this very temperament induced him afterwards to throw down his arms in battle and fly.

Cicero was exceedingly timid, not only in war, but even at the ſight of a naked ſword: he never began to ſpeak in public without evincing at the ſame time the greateſt timidity. He ſhewed the ſame weakneſs at the death of his daughter Tullia, All the philoſophers of his time endeavoured to conſole him, but to no purpoſe: he even put away his ſecond wiſe becauſe ſhe appeared to have a certain pleaſure in this death.

Helvetius obſerves, that if cold heads are leſs ſubject to theſe defects, it is becauſe they are but little ſuſceptible of great mobility; they therefore owe their moderation to the weakneſs of their paſſions. But notwithſtanding the great ſenſibility of their temperament, there are ſome perſons who are formed for the greateſt undertakings, and who brave the greateſt danger. Cæſar, a little before his death, ſaid to one of his friends: " What do you think " of Caſſius? I own he does not pleaſe me; for " he is very pale". In another moment, Anthony and Dolabella were mentioned to him as concerting ſomething againſt his intereſts. " No, no," ſays he, " I have no fears from ſuch large, and well combed " heads, but from thoſe which are thin and pale". Cæſar himſelf, who as a philoſopher, author, politician, general and monarch, has never yet had his equal, was of a weakly temperament, and appeared thin and delicate.

It would ſeem therefore, that this mobility of the organs, by means of which the body is affected by the ſlighteſt impreſſions, which renders the ſoul ſo ſuſceptible of the leaſt and moſt imperceptible ſenſations,

ſations, which has ſo much ſhare in the wit, and genius, and taſte, and which leads to the greateſt enterprizes, when reaſon preſides over the paſſions: this mobility, I ſay, prediſpoſes man to a variety of diſeaſes. Men of the beſt parts are in general the firſt to ſuffer from changes of the air, from irregularities in diet and from the paſſions. Their health, like their virtue, ſeems to be ſurrounded by a thouſand dangers.

We ſhall always be the moſt liable to thoſe diſeaſes which are analogous to our particular temperament. All the occaſional cauſes will affect a very ſenſible temperament much ſooner than any other; but eſpecially ſuch as act immediately on the nervous ſyſtem. The gout is frequently the lot of men of fine genius, and a lively imagination, who are influenced at the ſame time by violent paſſions.

Cæſar was ſubject to epilepſy, eſpecially on the eve of a battle. Virgil was extremely delicate. Bacon fell into ſyncope every time the moon was paſt its full. The Czar Peter was frequently attacked with convulſions. Paſchal was conſtantly ſurrounded with flames. Pope was ſubject to the moſt violent head-ach, and ſo was Baron Haller at the time he was immortalizing himſelf by his poems. Barratier, who died ſo young, and who was ſuch a prodigy of erudition and judgment, was always ailing. A Swiſs philoſopher twenty ſix years of age, who is extolled by the greateſt wits in Europe without being named, is of a very weakly conſtitution, and is pale and ſickly. The effects of the greater part of the remote cauſes will depend principally on the temperament.

rament. We ought not therefore to aſk whether any particular thing is good in itſelf; becauſe it may be uſeful to one perſon and extremely hurtful to another: its effects can be decided only by experience. By careful and exact obſervation we arrive at the knowledge of a man's temperament, and by this we may be enabled to judge of the effects any particular cauſe will excite in him. The theory of temperaments will therefore enable us to foreſee the diſeaſes that are likely to take place, and to determine the cauſe of them when actually preſent.

Many nations would ſeem indeed to have each their particular temperament, but to this there will always be many exceptions. Even in a ſmall diſtrict there is very often a great variety of temperament. The peaſants in my neighbourhood *(w)*, eſpecially on the borders of the Auſtrian territories, are exceedingly ſtupid, whereas in many parts of the canton of Berne they are ingenious, and ſome few of them even learned. Their dialect is likewiſe very ſoft and conſequently very different from that of the Swiſs in general, which is very harſh. There are ſome of theſe mountaineers who reliſh the writings of Wolff and Bayle, but amongſt theſe people, it muſt be confeſſed, one meets with many viſionaries of every kind, as in England. A very ſenſible eccleſiaſtic has aſſured me that he has found the peaſants who live along the lake of Thun to be exceedingly ſtupid, whereas the mountaineers who live as it were over their heads, are full of underſtanding. The former

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(*w*) Dr. Z. reſided at Zurich when he wrote this work.

he adds lead a purely animal life, and ſeem never to think; whilſt the latter read the moſt fanatical books. Fanaticiſm is very common in the mountains in Berne.

From theſe and other obſervations I am convinced that it would be to no purpoſe to attempt to give a ſyſtem of temperaments, becauſe the examples which might be adduced as exceptions to the general rule would be as numerous as thoſe on which the ſyſtem might be founded.

But there ſometimes occur in the natural conſtitution of the body certain ſingularities occaſioned by a peculiar ſenſibility of ſome or all the nerves, in conſequence of which a man ſhall be affected in an extraordinary and unuſual manner. This is what phyſicians have named *idioſyncraſy*. This peculiar conſtitutional diſpoſition differs from temperament, becauſe it cannot be diſtinguiſhed by certain ſigns as is the caſe with temperament, nor does it ſo much prediſpoſe to particular diſeaſes as to change the nature of thoſe which ariſe from temperament, though it may create ſome diverſity in their ſymptoms. This idioſyncraſy is particularly obſervable in delicate and hyſterical women. Baron Haller ſpeaks of a woman to whom the mere touch of any ſilken ſtuff, or fiſh ſkin was inſupportable. I myſelf know a young lady who is in good health, and has a great deal of good ſenſe, and yet cannot bear the noiſe of taffetas: ſhe even feels ſlight ſpaſms every time any body comes too near to her with a gown of this ſort. Profeſſor Albinus the younger, uſed to fall into extreme anxieties at a ſound which had no effect on any other beſides himſelf. Mr. Lambert, a very celebrated mathematician, cannot ſupport any perſons breath, and this is the reaſon why he retreats a ſtep or two when any body ſpeaks to him. My friend Dr. Hirzel tells me of a man of genius who feels unheard of pains every time his nails are pared. There are others who cannot bear their faces to be wiped with a ſponge without falling into extreme agonies. I know a perſon who cannot drink any of the rich French or Spaniſh wines without being incommoded by them, and yet feels no ſuch effect from Burgundy or Champaigne. Another perſon who is a phyſician, ſwallows ſnails, and digeſts them without any difficulty, and yet cannot eat cauliflowers. There are ſome people who digeſt beef eaſily, but who cannot eat the tendereſt bird without being troubled with indigeſtion. Coffee is an emetic to ſome ſubjects. We frequently meet with people who have an unconquerable averſion to ſome particular ſmell. Some will be purged by diaſcordium, and not at all affected by jalap. Boerhaave has ſeen people ſwell all over after having eaten a few cherries or gooſeberries. The ſame thing will happen in ſome perſons after ſwallowing ſalmon, ſhell fiſh, herrings and even the Peruvian bark. Gaubius has ſeen crabs eyes, the moſt innocent, one would think, of all ſubſtances, produce all the effects of arſenic. Baron Haller has ſeen violent purging and convulſions brought on by ſyrup of roſes. Theſe and many other examples which might be quoted to the ſame purpoſe prove that the moſt innocent things in appearance may from idioſyncraſy occaſionally produce the moſt alarming effects.

The cauſes of theſe ſingularities are without doubt very often inherent in the body; but at the ſame time it is inconteſtable that in many perſons they depend on impreſſions made on the ſoul by ſome external agent. Locke has proved that it is by habit we ſometimes adopt a particular mode of thinking or acting; he is of opinion that theſe habits are nothing more than the conſequences of a determined courſe of the vital ſpirits, which gradually becomes natural to them by a repetition of the ſame organic motions that firſt produced them. A woman may therefore conceive that a ſmell, a taſte, a colour, a word, a thought, or a drug is diſagreeable to her, without its being ſo in reality; but yet by a frequent return of this idea, a determinate motion at length takes place in the ſenſorium, which by repetition becomes as it were natural, tho' at firſt it was really a falſe and capricious idea. It is eaſy, however, to diſtinguiſh this factitious ſingularity from that which is truly natural and inherent. I was one day going to preſcribe theriaca to a female patient. She had rather die, ſhe ſaid, than take theriaca, to which ſhe had an unconquerable averſion, tho' it came out that ſhe had never taſted it. You are quite in the right of it, ſaid I, madam, you will do well even to avoid the ſight of a drug which may have the moſt dangerous effects. But the ſame day I ordered a mixture, the principal ingredient of which was theriaca. The next day my patient was better. She continued the uſe of her mixture, and after her recovery gave me a thouſand thanks, for not having given her theriaca, which would infallibly have killed her.

I beg leave to mention in this place, what is indeed another kind of factitious affection, but which is commonly ſo ſtrengthened into habit, as to be irremediable. A man who imbibes any particular idea in his early youth, is ſo ſtrongly affected with it, that he never gives it up, even in maturer life, if it has been frequently repeated. In good truth why do we ſee people ſo bigotted to ſome particular error, who are open to conviction in every other reſpect, and yet are blindly bigotted to this; but that from their infancy they have heard ſome abſurd tale a thouſand times repeated, and by theſe means the idea has been ſo firmly imprinted in them, that it would be as eaſy to whiten the Æthiopian as to remove their ſuperſtition.

The celebrated author of Triſtram Shandy, one of the moſt extraordinary books by the bye, that ever has, or perhaps ever will be written, conſiders the prejudices of education as ſo many demons, which poſſeſs us in our reſearches. If a writer ſhould be ſimple enough to give himſelf up without reſerve to their inſpirations what would his book be? nothing but a ſtrange mixture of the idle dreams and abſurdities of the old women of both ſexes.

Theſe ſame reflections will lead us to underſtand the particular kind of ſingularity, which we call antipathy, and which ſometimes occaſions convulſions and fury. Struck in early infancy with an extreme fear by ſome particular object, a diſpoſition to the ſame violent impreſſion continues through life. The paſſion which poſſeſſes a man at the ſight, or even the idea of any particular object, is what I call antipathy.

tipathy. Many inſtances might be quoted in this way, but I will content myſelf with one of which I was an eye witneſs. Happening to be in company with ſome Engliſh gentlemen, all of them men of diſtinction, the converſation fell upon antipathies. Many of the company denied their reality, and conſidered them as idle ſtories, but I aſſured them that they were truly a diſeaſe. Mr. William Matthews, ſon to the governor of Barbadoes, was of my opinion, becauſe he himſelf had an antipathy to ſpiders. The reſt of the company laughed at him. I undertook to prove to them that this antiphathy was really an impreſſion on his ſoul reſulting from the determination of a mechanical effect. Lord John Murray undertook to ſhape ſome black wax into the appearance of a ſpider, with a view to obſerve whether the antipathy would take place, at the ſimple figure of the inſect. He then withdrew for a moment, and came in again with the wax in his hand, which he kept ſhut. Mr. Matthews who in other reſpects was a very amiable and moderate man, immediately conceiving that his friend really had a ſpider in his hand, clapped his hand to his ſword with extreme fury, and running back towards the partition cried out moſt horribly. All the muſcles of his face were ſwelled, his eyes were rolling in their ſockets, and his body was immoveable. We were all exceedingly alarmed, and immediately ran to his aſſiſtance, took his ſword from him, and aſſured him that what he had conceived to be a ſpider was nothing more than a bit of wax, which he might ſee upon the table.

He remained for ſometime in this ſpaſmodic ſtate, but at length he began gradually to recover, and to deplore the horrible paſſion, from which he ſtill ſuffered. His pulſe was very ſtrong and quick, and his whole body was covered with a cold ſweat: after taking an anodyne draught, he reſumed his uſual tranquility,

We are not to wonder at this antipathy. The ſpiders at Barbadoes are very large, and of an hideous figure. Mr. Matthews was born there, and his antipathy was therefore to be accounted for. Some of the company undertook to make a little waxen ſpider in his preſence, He ſaw this done with great tranquility, but he could not be perſuaded to touch it; tho' he was by no means a timorous man in other reſpects. Nor would he follow my advice, to endeavour to conquer this antipathy, by firſt drawing parts of ſpiders of different ſorts, and after a time, whole ſpiders, till at length he might be able to look at portions of real ſpiders, and thus gradually accuſtoms himſelf to whole ones, at firſt dead ones. and then living ones. If it had been any way poſſible to overcome this antipathy, I think ſuch a method would have been the moſt likely to have ſucceeded.

I ſhall now mention ſome of the remote cauſes of diſeaſe which are owing to a vicious conſtitution, or mal-conformation of the body. Theſe defects may be either wholly concealed, or only partly ſo, or they may be manifeſt. We may conſider an hereditary diſpoſition to certain diſeaſes, as belonging to the firſt of theſe claſſes. The intemperance and luxury of the times are the reaſons why our children bring with them into the world the ſeeds of diſeaſes, and are ſo weakly and delicate. The tenia or long tape worm, which is ſo frequent in children in Spain and France, and in the French part of Switzerland, ſeems to be occaſioned by the irregularity of their parents. Nor are our towns in Switzerland more free from libertiniſm than other places. If children do not really bring the lues with them into the world, yet we may be aſſured that men who are enervated by diſeaſe, and miſmanagement, will be able to give life only to a puny offspring. The venereal virus may for a long time circulate in the mother's veins without manifeſting itſelf by any determinate ſigns or ſymptoms. But the children who are born of ſuch parents are ſubject to tinea, cuticular eruptions, and ulcerations; and ſometimes, to diſeaſes which do not manifeſt themſelves until the age of puberty, or even later. Dr. Raulin gives us a ſtriking example of theſe hereditary diſeaſes.

Boerrhaave is of opinion that thoſe children are the moſt ſubject to rickets, who are born of relaxed and indolent parents who feed much on fat and delicate meats, drink much wine and tepid liquors, or are worn out by exceſſive venery, diſeaſes, and more eſpecially if thoſe diſeaſes have been venereal.

An hereditary diſpoſition to diſeaſes, both of the body and mind, is ſometimes of ſingular activity, perpetuates itſelf through ſeveral generations, ſometimes remains dormant during many years, and then again appears on a ſudden. Linnæus, tells us of a man who was freed from a diſpoſition to colic, by matrimony, but that he tranſmitted this complaint to two of his children to whom it proved fatal. Gaubius relates, after Donatus, a fact mentioned by Boethius, in his hiſtory of Scotland, of a ſcotch girl who preſerved a deciſive taſte for human fleſh, a crime for which her father and mother had been burnt, when ſhe was only a year old.

Other conſtitutional defects are concealed only in part. Of this claſs is a vicious ſtate of the ſolids, which tho' perhaps, not yet trulyamounting to diſeaſe, will at length become ſuch, either of itſelf, or by acceſſary cauſes.

It is proved by repeated obſervations that in many individuals it may happen that one part is ſtronger than another, and a careful attention will eaſily lead us to diſtinguiſh it. Thus I have remarked that they who have weak eyes have a deep redneſs around thoſe organs after any violent emotion. A ſimilar cauſe will excite tooth ach in thoſe who have bad teeth; or a cough, or oppreſſion in ſuch as have a weak breaſt; inclination to vomit, or a painful cramp in thoſe who have a weak ſtomach; or colic, and diarrhoea in ſuch as have a weakneſs of the inteſtines; others who have a great weakneſs of the bladder, feel painful ſpaſms or diſcharge much urine on ſuch occaſions. All theſe ſymptoms come on ſuddenly. Women who are conſtantly incommoded with fluor albus, feel after any ſudden emotions a pain in the loins. They who have been long ſubject to gouty pains will experience a return of them; or ſuch as are ſubject to convulſions, will have an univerſal tremor whenever they are ſuddenly agitated. All theſe obſervations prove that the weaker part of the ſyſtem, is that on which the effects of each of theſe emotions are principally exerted. It will be on this ſame part likewiſe that the occaſional cauſes of diſeaſes will in general operate firſt and more particularly. It has alſo been very judiciouſly remarked, that this weaker part is very often that to which all the other ills of the habit are attracted. Our fluids are known to be determined in the greateſt proportion to thoſe parts of the body where they meet with the leaſt reſiſtance. This is perhaps the chief ſource of tophi, and ſteatomatous and other tumours which occaſionally originate in the body. Boerrhaave obſerves that a tophus is very eaſily formed in weak and delicate lungs, if ſuch perſons cool themſelves on a ſudden after being over heated, and that the patients are at length carried off by a violent hemoptoe, of which this concretion is the cauſe. He is of opinion likewiſe, that in diſeaſes of this ſort, we may in general preſume a ſimilar concretion in the lungs, when the patient has a dry cough. The eyes are found to ſuffer more from exceſſive venery, than the organs that are actually employed in it. A weak ſtomach often deſtroys the energy both of the body and mind.

The whole nervous ſyſtem is ſometimes extremely weak; and this is either from a natural diſpoſition or is brought on through different kinds of exceſs. They who are born with a weakly nervous ſyſtem, have ſmall bones, feeble limbs, and ſoft fleſh, they are likewiſe in general of a pale complexion, and have only a tranſitory bloom on their countenance. They are very ſoon fatigued, and have a weak pulſe. Their ſoul is extremely ſenſible, and eaſily agitated, and they ſeem to be the more expoſed to diſeaſes, as they fear them the more. I know a Swiſs gentleman,

tleman, of very reſpectable talents, who has been hypochondriacal ever ſince he was ſix years old, and this through the extreme weakneſs of his nerves. I have likewiſe obſerved all the little ſymptoms of hyſterical affection in girls of ſix or eight years of age; and this not from worms, but from the weakneſs of their nervous ſyſtems.

There are others who weaken the tone of their nerves by every kind of exceſs. The moſt robuſt people are often of this number, from an unhappy notion that their ſtrength of conſtitution ſecures them from danger. Intemperance, both in eating and drinking, ſeems to be a kind of war, which the generality of men are continually carrying on againſt their nerves.

The venereal appetite is very often ſtimulated by intemperance in regimen; and exceſſive venery is another great ſource of debility, and hurries men on to a premature old age. In this part of Switzerland, which in the opinion of Voltaire is the ſeat of ſound philoſophy, this debility is not ſo much the effect of intemperance in eating and drinking, as of a vice which unfortunately is but to prevalent here, as well as in every other country of Europe, at an age when even the deſtination of the ſexes ought not to be known.

Our modern Epicureans, who pride themſelves in their indolence and luxury, ſeem not to conſider that in the ſyſtem of Epicurus, pleaſure, was what it really is in nature, a real good; and pain, a real evil. Nature directs us to the purſuit after pleaſure, only ſo far as it is innocent and not productive of pain; and this was the aim of Epicurus, whoſe morality was the moſt ſevere of any the antient philoſophers, as has been proved by the moſt ingenious writers. Horace in mature age, adopted this ſyſtem, and as he tells us, returned now and then to that of Ariſtippus to unbend his brow: *Nunc in Ariſtippi furtim præcepta relabor.*

Modern voluptuouſneſs is the ſource of an infinite number of ills which are every day deſtructive to health and population. Perſons enervated by indolence and luxury, are brought into danger by a degree of ſickneſs, which would hardly affect a man of firm and healthy ſtamina; the phyſician will do well to attend to this, becauſe the diſorders of theſe people have almoſt all of them ſome peculiarity different from the true and ordinary character of the diſeaſe itſelf. I have obſerved that theſe people die in a very tranquil manner: life is extinguiſhed in them like the flame of a lamp, and this at a time perhaps, when we ſhould think them out of danger, were we to judge of their diſeaſes without taking the conſtitution of the patient into the account.

Voluptuouſneſs does indeed not always prove immediately fatal; its more general effects are to promote hypochondriacal and hyſterical affection and melancholy. In this ſtate, worn out with diſcontent, and with ills both real and imaginary, the patients ſeem to become ſo many furies deſtined to torment all thoſe who are near them. Dr. Thierry, who was phyſician to the pretender at Rome, ſtiles theſe patients the plague of phyſic.

Both theſe and literary men will in general be more ſuſceptible, than others, of epidemical diſeaſes, which commonly attack the moſt enervated firſt, and to theſe they likewiſe prove the moſt fatal. People who live luxuriouſly, and at their eaſe, become filled with unhealthy juices. Boerhaave tells us that diſeaſes, and eſpecially acute fevers, are the moſt fatal to fat people, becauſe the increaſed heat melts down the fat, which by its rancidity irritates the ſolids, and thus increaſes the danger.

I likewiſe include amongſt the manifeſt defects, which render us more ſuſceptible of impreſſion from the occaſional cauſes, thoſe changes in the diſpoſition both of the mind and body which are the effects of former diſeaſes. Thus a perſon who has been afflicted with a convulſive diſorder, will feel a return of it on the leaſt occaſion. They who have been attacked with inflammation of the breaſt, ought carefully to guard againſt a relapſe, which is eaſily brought on. An incomplete apoplexy, from the impreſſion it leaves on the origin of the nerves, is almoſt always a prelude to complete apoplexy. A ſlight dropſy, tho' cured, leaves ſuch a diſpoſition in the part affected, as to bring on the complaint again, whenever the ſecretions are in the leaſt diſordered.

But a diſorder that is apparently well cured, often gives riſe to a very different complaint. Hydrothorax is ſometimes an immediate follower of inflammation of the breaſt; but in many patients, this ſecondary diſeaſe does not manifeſt itſelf till many years afterwards, tho' its cauſe is the ſame. I have ſeen a woman cured to all appearance of jaundice, continue free from complaint during twelve years, and at the end of that time die dropſical. A man thirty two years of age, who during eleven years had been ſubject to epilepſy, had no return of his fits during eleven months, but at the end of that time died apoplectic. Theſe examples, together with many others which preſent themſelves every day in practice, prove how much attention is required to inveſtigate the internal and external cauſes of diſeaſes.

Diſeaſes will likewiſe ſometimes alter the temperament. Ariſtotle long ago pointed out the poſſibility of ſuch a change by means of age, regimen, habit, or education. A lady of the firſt diſtinction in our Cantons, told me, in her ſeventieth year, that till her twenty fifth, ſhe had always been exceedingly delicate. But that about that time ſhe fell into a profound melancholy, which continued a year, when ſhe got well again, after taking a great variety of drugs; but that ſince that time ſhe has had ſo conſtant a tranquility of mind, as to be unable to ſhed a tear even in the midſt of the greateſt adverſity. This old lady was as gay and alert as ſome girls are at twenty.

But if there are ſome diſeaſes which diminiſh the ſenſibility of temperament, there are others which increaſe it. Diſeaſes act ſometimes upon the mind, ſometimes upon the paſſions, and always upon ſome faculty which depends on the organization which determines the ſeveral ſenſes, the ſentiments, the inclinations, and the paſſions.

The rickets, in general, expand and accelerate children's underſtanding, but not invariably. I have ſeen the moſt amiable children, become croſs and unmanageable from worm complaints, or obſtructions of the meſentery. The moſt modeſt and the gentleſt girls have become perfect furies through a ſuppreſſion of the menſes. A man of a very tractable character, and who had always been fond of his wife, had his temper ſo much changed by a malignant fever, that during many months he never ſpoke to her, but in rebuke: even his friends could not ſpeak to him without giving offence.

The imagination may have been ſo ſtruck with a former diſeaſe, as to be in continual apprehenſion of not being cured, or at leaſt to fancy that ſome reliques of the complaint are ſtill exiſting. This has been particularly remarked in perſons who have been cured of the venereal diſeaſe and who are ſo frequently fancying they have ſome fatal remains of the virus in their conſtitution. This is the reaſon why phyſicians find it more difficult to cure imaginary than real ills.

I remember a very devout man, who in a moment of gallantry contracted the lues. He was properly treated and cured, but never fancied himſelf quite free from the taint. This notion even prevented his marrying. At length he conſulted me, and finding his health and conſtitution unhurt, I indulged him with a few mercurial frictions meerly to cure his imagination. At the end of a few weeks, he informed me that every thing was in good order: that is, his imagination was cured.

Theſe examples will ſuffice, I believe, to prove how the remote cauſes find in the age, ſex, temperament, certain ſingularities of nature, or a defective ſtate of the body and mind, a matter which when combined with them is capable of producing every ſort of diſeaſe.

## CHAP. XV.

### *Of the Tendency of Nature to preſerve Health.*

WE have pointed out in the preceding chapters, a multitude of cauſes which are occaſionally deſtructive to health, and there now remains for us to inquire by what power or principle man is enabled to ward off theſe various ſources of diſeaſe to ſome or more of which he is every day expoſed both from the nature of things and his own miſconduct. We ſhall find this principle within the body itſelf. Nature, who is conſtantly attentive to the preſervation of her own productions, ſeems ſometimes to exert ſingular efforts, and to find within herſelf, reſources, which neither the genius nor the induſtry of man would be able to diſcover.

The powers, which man is enabled to oppoſe to the action of theſe cauſes, are to be ſought for in the ſeparation of parts in general; in the re-union and conſolidation of thoſe which have been torn or broken; in the ſeparation of the diſeaſed parts from the ſound, and in ſuppuration; in the excretion of what is noxious, whether it be by the ordinary ſecretions or through any extraordinary channel; ſometimes in ſever; in the conſent of parts; in the regimen of liſe; in the temperament; in cuſtom; and in fine, in the influence of the ſoul over the body.

Sometimes the effects of external things are hurtful only in particular circumſtances; or rather the greater number of cauſes which act upon the body may be conſidered as having only relative effects. Hard aliment would be improper for a ſedentary man, whereas it may be very neceſſary for another who uſes much exerciſe. Labouring men require ſtrong food, and in abundance. It is obſervable however, that a man whoſe buſineſs requires him to uſe much exerciſe, will digeſt much better than another who exerciſes himſelf merely for the ſake of health. In the former, both the body and mind ſeem to be employed, whereas in the latter, the mind is intent on one object. I have often ſeen hypochondriacal patients extremely fatigued after any involuntary exerciſe which they took merely for the ſake of motion, and who conſtantly found themſelves much better after any manual employment which their affairs might require of them.

Exceſs of diet may therefore contribute to the health of a workman, a peaſant, or a ſoldier; or rather no one is incommoded but he who eats or drinks more than he can digeſt. One man ſhall be intoxicated by half a pint of wine, whilſt another ſhall be able to drink three times that quantity without inconvenience. It will be better however, to be moderate, and not to go quite to the extent of our abilities in this reſpect. Intemperance may ſometimes have its uſe; becauſe the body ſuffers leſs from the varied effects of different cauſes, than from the effects of a ſingle cauſe which operates uniformly and continually. It is unhealthy to be always ſober, becauſe too great a uniformity of life renders us extremely ſuſceptible of the leaſt change. Horace thought it pleaſing to be a little mirthful, and even fooliſh upon occaſion: nor can I blame his maxim, when this occaſion is an agreeable one, and not too frequently repeated.

Ariſtotle conſidered health as the reſult of a habit of mediocrity. But Plato's opinion here was preferable to Ariſtotle's; and this was, that in order to preſerve health, the body ought never to be exerciſed without the mind, nor the mind without the body, that the neceſſary equilibrium might be duly kept up. Plato therefore recommended it to all thoſe who ſtudied the mathematics, or any other ſcience, to uſe as much bodily exerciſe as poſſible, and to amuſe themſelves with the muſes and philoſophy not in the way of ſtudy but of relaxation. Boerhaave uſed to give a ſimilar advice to his followers. The greater your deſire is to be inſtructed, ſays he, the more will your health be affected, and eſpecially if your ſtudies are directed ſolely to one ſcience. You muſt never confine yourſelves long to one object, if you wiſh to avoid melancholy. Endeavour to vary your labours, and to employ yourſelves occaſionally on ſubjects of a very oppoſite nature. If you cultivate the mathematics, for inſtance, amuſe yourſelves now and then with poetry or muſic, and by theſe means you will keep up the neceſſary equilibrium between your intellectual and bodily faculties.

It is becauſe I have followed this ſalutary advice, and amuſed myſelf with the writing a few trifles, that envy and calumny have held me forth as an ideot, wholly ignorant of the profeſſion I have adopted. But it is to the obſervation of theſe precepts that I owe my health. Altho' our days may be counted by the *Tien*, or Supreme Being, as is obſerved by the author of the book Tchang-Seng, yet I believe it very reaſonable to ſuppoſe that their duration depends on ourſelves.

Many effects, that are in themſelves dangerous, are rendered innocent by habit. In the phyſical, as in the moral world, the moſt diſagreeable things become ſupportable by dint of ſeeing and feeling them. A Swiſs before he has been ſix months in France, is converted, from a very uncouth and inelegant being, into the moſt ridiculous fop.

It would ſeem likewiſe that with reſpect to the body, habit determines the ſenſibility of all its parts. The education of the Spartans was founded on this principle. The Greeks were extremely attentive to bodily exerciſe and knew how to form the minds of their children to virtue by the ſame rules. Even the ſtupid Laplanders ſeem to be acquainted with this law of Nature: they ſhut up their children in little cradles and ſuſpending them in their huts, amidſt the ſmoke, ſwing them with cords.

I can prove by many examples, that by habit we may become reconciled to things which are, as it were ſo many remote cauſes of diſeaſes. I obſerve many of our peaſants go with their boſoms naked in the coldeſt winter, whilſt their children run barefooted in the ſnow. A worthy eccleſiaſtic in my neighbourhood has ſeen children ſliding barefooted on the ice. Addiſon tells us, that the inhabitants of Nova Zembla go barefooted without complaining of the rigorous cold of their climate. Boerhaave, however, has ſeen an incurable palſy brought on in the moſt robuſt people by lying down in the night on wet graſs, and yet we ſee our Swiſs peaſants do this every day without inconvenience, and this merely from habit.

Habit has likewiſe wonderful effects with reſpect to our food. I know many people who have adopted a particular regimen, and which is become neceſſary to them, altho' it be hurtful perhaps to others. In Peru and at Batavia, pork has the reputation of being a very healthy food; and this is probably more the effect of habit than of any particular nature of the hogs of thoſe countries. Almoſt in every part of India, aſafœtida is uſed as a ſeaſoning in cookery: I myſelf ſometimes chew it in order to rouſe my ſpirits, and it is to me a real luxury.

Lanciſi tells us that the Mexicans eat, without any inconvenience, the eggs of the inſects, the fiſh, and even the filth of marſhy places.

Aliment that is difficult of digeſtion ſometimes becomes innocent through habit. We ſee many people who with very weak ſtomachs, are able to digeſt beef and brown bread. Hippocrates, therefore, did right to obſerve, that heavy, hard and indigeſtible food does not incommode even weak ſtomachs that are uſed to it. I know a Swiſs officer who always pays for two at every tavern, and is in very good health. Such inſtances are not unfrequent in Switzerland. Biſhop Burnet has deſcribed the gluttony of our Cantons ſuch as it really is. I cannot reflect without horror on the immenſe quantity of food that ſome of our Swiſs gentlemen devour at a breakfaſt. An Heſſian officer who was born at Franckfort on the Mayne, and who ſtudied in the Univerſity of Erlangen, uſed to dine every day at two different taverns, and pay at each of them for two; between his two meals, he uſed to devour ſix pounds of bread, and as many little cheeſes. He was a tall, well made man, eighteen years of age, and was in perfect health.

Bacon tells us that phyſicians ſeem to have inſiſted too much on ſobriety; it appearing that gluttony, when become habitual, proves a better ſupport to health than the ſo much vaunted ſobriety, which only tends to render nature inactive, and incapable of any extraordinary effort or of ſupporting abſtinence. It is certain that a body that is well fed will ſupport faſting, and even ſome diſeaſes, with much leſs inconvenience than another that is ſupplied as it were, only for the moment.

But here is a ſact which proves to what degree the body may accommodate itſelf to every change. An eccleſiaſtic, who was a very amiable man, happened to be one day of a party where they eat and drank to exceſs, and there he ſuddled himſelf after eating immoderately. He was ſo vexed at this, that the next day he reſolved to leave off meat and wine and pulſe; and to live wholly on bread and water and fruit. He was fifty years old when he adopted this plan, and he continued it a long time, and enjoyed the beſt health, eating two pounds of bread, with two bottles of water, and three or four apples, every day *(x)*. I will allow that ſuch changes in regimen may in many ſubjects be productive of bad effects, but theſe will depend on circumſtances.

One might be led to think likewiſe, that ſpirituous liquors are leſs noxious when drank habitually, but

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*(x)* Sir George Baker has related the caſe of a Miller, at Billericay in Eſſex, whoſe diet for many years paſt has been confined to a pudding made of ſea-biſcuit and milk; and who abſtains wholly from drink, not having taſted even water ſince the year 1766. This diet he adopted on a ſudden, in his 45th year; and from being a very corpulent man, and in a very bad ſtate of health, has reduced himſelf to a moderate ſize, takes but little ſleep, uſes a great deal of exerciſe, and to uſe his own expreſſion, is metamorphoſed from the condition of an unhealthy decrepid old man, to perfect health, and to the vigour and activity of youth, though he is now approaching to his 60th year. His pulſe beats from 44 to 47 ſtrokes in a minute, and he makes every day about a pint and an half of urine which is of a full amber colour. It is remarkable that he never ſuffers his hogs to drink, and to this he attributes the excellency of his pork, which is greatly valued on account of the whiteneſs and firmneſs of the fleſh. See *Med. Tranſ.* Vol. II.

this ſeems to depend more on climate than habit, as we have already remarked in our chapter on drink.

By habit, men reconcile themſelves to opium, which, even in a ſmall doſe, will in general prove fatal to thoſe who are not accuſtomed to it. There is hardly a Turkiſh Janizary who does not take his two drachms of opium every day. I know a Swiſs advocate who does the ſame thing every day without any inconvenience.

Of all the rules of health, thoſe which preſcribe exerciſe ſeem to be the moſt indiſpenſable. And yet we ſee whole nations habituated to indolence and inactivity. The *Vettones*, or ancient inhabitants of the country of Salamanca, were ſo accuſtomed to a ſitting poſture, that they were ſurprized to ſee the Roman officers who came amongſt them walking and exerciſing themſelves. The ſame thing happened to the French at Madagaſcar. The Turks are ſo attached to their ſophas, that they are aſtoniſhed to hear people talk of walking to any place for the mere pleaſure of coming back again, and yet La Motraye tells us, that he never ſaw any nation leſs ſubject to diſeaſes than the Turks, and that many of them live more than a century. Their regular mode of life, and the ſimplicity of their diet contribute not a little to their longevity.

The paſſions, which are in themſelves ſo fatal to many perſons, are ſometimes a principle of health in others. There are choleric people who give vent to their paſſion on the moſt trifling occaſions, and who are rendered more vigorous and active by it.

I knew at Paris, the Abbé Sambrano, who was a very learned, ingenious, and eloquent man. This man could do nothing without the moſt violent exertions. Even in common converſation he had the moſt ſingular grimaces, rolled his eyes, moved his arms and ſhoulders, ſtamped with his feet, and in ſhort was ſo agitated that I am ſure it would have been impoſſible for me to have imitated him for a quarter of an hour without loſing all my ſtrength. And yet the Abbé was never better than when he had talked to me in this manner, at the Thuilleries, ſeveral hours together.

Habit will likewiſe determine the effects of many external things. The ſame odour which revives a Sultaneſs, would be deteſtable to an European. The Siameſe are as fond of rotten eggs as the Swiſs are of rotten cheeſe. In ſome parts of America they chew the bark of the *palma chriſti*, which is very acrid and corroſive. The ladies in Peru are never without the *limpion*, or roll of tobacco, in their mouths.

The moſt delicate women go with their boſoms expoſed in the coldeſt winter, and yet the hardieſt men, who are accuſtomed to be well cloathed, would be unable to do this without danger.

The ancients, who went bare headed, were ſeldom ſubject to colds, head ach, pains of the teeth, &c. with which we are, perhaps, the more frequently attacked, becauſe we are more careful to cover our heads. Helmont the younger, even in advanced life, uſed to waſh his head every day under the pump, and was never ſubject either to colds or head ach. Locke adviſed the waſhing children's feet every morning with cold water. I have obſerved in Switzerland, the good effects of waſhing our children with cold water. The moſt delicate are ſoon reconciled to it. This method begins now to be adopted in France, and other countries. There are ſome perſons who oppoſe themſelves to it from a miſtaken notion, that it renders children yellow, pale and ſickly. There are many countries where children are plunged into cold water the moment they are born, and this method, by being repeated, renders them robuſt and healthy, and fits them to roll in the ſnow when they grow older.

Habit will likewiſe diminiſh the energy of ſome contagious diſeaſes. This led Hippocrates to ſay that what is diſeaſe at one time may not be ſo at another. The negroes from the coaſt of Guinea, have brought with them to Guardaloupe and Jamaica a very bad ſpecies of leproſy, which ſeems to be the true Elephantiaſis. This diſeaſe is communicated by the venereal commerce, and likewiſe by living or being frequently with the infected. The diſorder is likewiſe hereditary. And yet there are many men who remain free from taint notwithſtanding their connexions with infected women; and many women admit the embraces of leprous men without gaining the diſeaſe. Doctor Peyſſonnel who has given a good account of this diſeaſe, concludes that a perſon muſt have a certain prediſpoſition

diſpoſition of body to receive the infection, and that it may be poſſible to accuſtom ourſelves to contagion as we do to poiſons. We ſee many unhealthy countries in which men live neverthele ſs to a great age. Mr. Wargentin has proved in the Stockholm Memoirs, that men live as long in Holland and Sweden, as in France and England.

Even Valetudinarians ſometimes live to a great age. Women in general live longer than men, and this is attributed by Boerhaave to the greater feebleneſs of their ſtructure. There are many women who are always ſick, and yet live to be very old, amidſt infirmities which would deſtroy the ſtrongeſt man. We likewiſe ſee ſimilar inſtances in men. The lives of all theſe people would be inſupportable were not their pains ſoftened by habit. I have often obſerved, that perſons who have been accuſtomed to ſickneſs, ſupport their pains much better than thoſe who have conſtantly enjoyed good health.

I ſhall prove in another work, that by long habit even the beſt medicines become inefficacious, which appears leſs wonderful when we conſider that men may accuſtom themſelves even to poiſons. The Encyclopediſts tell us, however, that we are not to believe that Mithridrates accuſtomed himſelf to poiſons, becauſe in their opinion, a man can no more accuſtom himſelf to theſe than to the ſtab of a poignard. They tell us that the Czar Peter ordered that all the children of ſea-faring people ſhould be accuſtomed to drink ſea water; but that all who drank, died. There are many exceptions to be made to the reflections of theſe gentlemen. Schaarſchmidt obſerves that we may accuſtom ourſelves even to arſenic. Galen ſaid the ſame thing of the cicuta, and Linnæus of the aconitum. And yet there can be no doubt but that the water hemlock, ſtramonium, henbane and aconitum are true poiſons, notwithſtanding the uſeful application of them by Dr. Storck in the cure of many dangerous chronic diſeaſes (*y*), by beginning with very ſmall doſes, and gradually augmenting them to a certain degree. All that I mean to conclude from the obſervations I have delivered on habit, is, that every thing is apparently, not equally uſeful or noxious to every individual. Thus one man ſhall accuſtom himſelf to ſleep only a few hours, whereas another through habit ſhall require twice as much. The affinity or the repugnance we obſerve between our bodies and the external cauſes, extend only to a certain degree; this eſſential point can be determined only by experience. But we ought to be very cautious how we generalize from individual obſervations, however numerous they may be, or how we argue in particular caſes from general ſyſtems.

The innate powers of temperament will ſometimes render the moſt unhealthy things innocent, in certain circumſtances. The pores are always open in ſtrong and healthy people, and even in cold and damp weather; they are then cloſed only in weak ſubjects. A Swiſs who conſiders himſelf to

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(*y*) All medicines are poiſons, but all poiſons are not medicines.

be of a very weak temperament, was attacked in the month of November with a catarrhal ſever which was at that time epidemic in Switzerland. He got up in the middle of the night with a great degree of ſever, and ſought for water to quench his thirſt; but finding none in the houſe he ran down into the ſtreet bareſooted, drank heartily at a neighbouring ſountain, and then filling his jug with water, went home and emptied it beſore he got into bed again. The next morning his ſever had leſt him. The Ruſſians are ſo hardy, that after ſweating in a hot bath, they go immediately, even in the midſt of winter, and roll in the ſnow.

A ſoul, which has a certain empire over the body it animates, may likewiſe be of infinite uſe in preſerving liſe and health. This empire of the ſoul is by no means a chimæra; I have ſeen many inſtances of the happy effects of a fortitude of mind founded on ſolid reflections. A young woman at Berne had ſo great a ſear of thunder, that on the leaſt appearance of a ſtorm ſhe uſed to hide herſelf in the cellar. She was one day in a numerous company in the very moment when a ſtorm happened; and immediately ran home to her cellar, but before ſhe could get within doors, the lightning fell cloſe beſide her. This event recalled her to herſelf. She immediately made the moſt ſerious reflections, and being convinced that it is impoſſible to elude the arm of the Almighty, ſhe now ſees the moſt terrible thunder ſtorms with tranquility. A lady at Zurich, had the ſame weakneſs, till the lightning fell one day in the room in which ſhe was ſitting. This led her to ſimilar reflections, and freed her from her fears.

But another thing which is ſtill more ſingular and yet equally true, is the power which the ſoul exerciſes over the body, by means of ſome ſudden and extraordinary emotion. Valleriola ſpeaks of a man, who had been many years confined to his bed, and deprived of the uſe of his limbs, and yet on being told that the houſe was on fire, ſuddenly recovered his ſtrength, and has preſerved the uſe of his limbs ever ſince (z). Pechlin tells us that one of his friends was ſuddenly cured of an obſtinate tertian by being in danger of ſhipwreck.

All theſe obſervations prove the natural powers which man himſelf poſſeſſes, and by means of which, he may prevent the ill effects of a great variety of cauſes, which of themſelves have a tendency to deſtroy life and health; and to theſe cauſes he is every moment expoſed both in the air he breathes, and in the food he takes in for his ſupport. We

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*(z)* Dr. Muſgrave tells us he knew a gentleman, (and it would be eaſy to add many ſimilar examples) whoſe feet were ſo cripled with the gout as to make it neceſſary for him to be carried on a ſervant's back. In that poſture he was going up ſtairs, when an account was brought him from above, that his wife was fallen into a fit. Upon which he immediately got down from the ſervant's back ran up ſtairs without difficulty and by his own ſtrength lifted his wife off from the bed where ſhe lay. Another perſon, a lady, was cured of a maraſmus, when ſuppoſed by Dr. Huxham to be at the point of death, by a ſudden alarm of fire.

are therefore not to think it ſtrange, that Tiberius ſhould be of opinion, that a man, who at thirty years of age is incapable of being his own phyſician is unworthy of life. Rouſſeau who is always ſickly, unleſs he takes a great deal of exerciſe, deſpiſes both phyſicians and phyſic: and his reaſon for this will, perhaps be ſound in what we have juſt now ſaid.

# THE END.

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